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IMPACTS OF WESTERN SPRUCE BUDWORM ON SCENIC BEAUTY AND RECREATION RESOURCES

by
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Impacts of Western Spruce Budworm on Scenic Beauty and Recreation Resources

Final Report

Cooperative Research Agreement No. 28-C7-414
University of Arizona
and
Rocky Mountain Forest and Range Experiment Station
RWU 4501
USDA Forest Service

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Impacts of Western Spruce Budworm on Scenic Beauty and Recreation Resources

The Western Spruce Budworm (WSB, Choristoneura occidentalis) has a history of periodic outbreaks in the southern Rocky Mountains. WSB is currently at outbreak levels in several areas in northern New Mexico, and some of these areas are experiencing significant tree mortality as a result of successive years of defoliation. Adverse impacts of WSB damage have been the subject of growing concern for the public and for forest managers in the area. Of particular concern has been the impact of the pest on scenic and recreation resources and the potential for adverse effects on public use and on important tourist industries in the region.

A recent research planning workshop in Estes Park, CO (USDA Forest Service, 1987) identified eight categories of forest resources that may be threatened by WSB outbreaks. Significantly, five of the eight areas of concern can be classified as non-traditional "amenity" or "non-market" resources--recreation and tourism, wildlife habitat, rare and endangered species, property values (recreation and residential), and scenic beauty. All of these important forest benefits can be adversely affected by the defoliation and mortality associated with a WSB outbreak.

The Estes Park Workshop developed a conceptual model for understanding WSB impacts on the host forest and, in turn, the effects of changes in the forest on associated forest benefits. Using this model a number of areas were identified in which information was currently insufficient to guide forest management, and where further research was likely to provide a basis for improved effectiveness of forest management efforts. One area so identified was the effects of WSB induced changes in forest structure on

> "Scenic beauty, recreation, tourism, and concomitant economic value and property value."

The Estes Park model clearly indicates that effective management of WSB impacts on forest scenic beauty and related resources requires precise assessments of the relationships between different levels of WSB defoliation and mortality and different levels of scenic and recreation/tourism benefits. Effective action by forest managers can not be adequately guided by general impressions that these benefits are potentially threatened; better understanding of the nature and magnitude of WSB impacts on scenic and recreation resources, and of the effectiveness of alternative management interventions, is required.

Objectives

The goal of this cooperative research agreement between the Rocky Mountain Forest and Range Experiment Station (RWU 4501) and the University of Arizona was to extend understanding of the impacts of WSB damage on forest scenic and recreation resources. The specific focus of the current research was on developing methods for determining the effects of WSB damage on public perception of the scenic beauty of forest areas--an important component in recreation, tourism and residential property values, and an important forest resource in its own right.

The specific objectives of this initial cooperative research project were to:

1) Select at least 30 study sites in northern New Mexico typical of WSB affected forest areas in which scenic beauty and/or recreation values are significant and which coincide to the extent possible with those being inventoried and studied in the context of cooperative agreement No. 28-C6-392 (Thomas W. Swetnam, University of Arizona);

2) Collect systematically sampled color-slide photographs representing both "near-view" and (mid-range) "vista" perspectives for each site, the photographs represented the areas as they might typically be viewed by summer forest visitors and recreaters;

3) Acquire existing biological and physical inventory data (including data collected in CA 28-C6-392, cited above) for each selected site (and for "viewshed" areas where appropriate) and enter that data into a data storage and retrieval system;

4) Inspect, label and file the color-slide samples to insure cross referencing to geographic locations (including "viewsheds" for the vista representations) and to biological and physical data from 3) above;

5) Present a sample of color slides to college student observers for scenic beauty evaluation to pilot test the application of Scenic Beauty Estimation procedures to WSB damaged forest areas.

The study was subsequently amended to add two additional objectives:

6) Evaluate the capabilities of two computer-assisted visual simulation methods for displaying the effects of Western Spruce Budworm on southwestern mixed conifer forests.

7) Review and compare the methods of data acquisition and analysis used to evaluate the impacts of Western Spruce Budworm on scenic beauty.

In addition, it was determined that scenic effects of WSB should be investigated under winter snow conditions, typical of the skiing season when many tourists visit the affected areas. In order to avoid delaying photographing of snow scenes until the winter of 1988, a limited eighth objective was added to the current project:

8. Systematically photograph, in typical snow conditions, the study sites in the Red River, NM area that were selected to meet the first objective of the project, presented above.

Approach

At least from the time of the National Environmental Policy Act (1969) the US Forest Service has operated under a mandate to systematically include aesthetics and outdoor recreation opportunity in the management of the National Forests. This mandate has been reinforced and refined by the Forest and Rangeland Renewable Resources Planning Act (1974) and the National Forest Management Act (1976). Initial efforts to implement these policy directives have focused upon the development of expert assessment systems (Daniel & Vining, 1983, Zube, Sell & Taylor, 1982) such as the Forest Service landscape architects' Visual Management System (USDA 1974) and the Recreation Opportunity Spectrum (Buist & Hoots, 1982). These systems produce categorical classifications of forest areas based upon an expert evaluation of the characteristics of the area.

The Forest Service Visual Management System relies on the expert judgment of a trained landscape architect or other professional to classify the landscape into "Variety Classes" (A, B and C). Based on this classification and an expert assessment of "Sensitivity" (based on the number of viewers, the context in which they are expected to see the area and the distance from which it will be seen) forest areas are designated for different "Visual Quality Objectives" (Retention, Partial Retention, Modification or Rehabilitation). These objectives typically enter the planning process in the form of general guidelines and constraints to management actions.

Categorical classifications of recreation or scenic values based on largely qualitative analyses have proven difficult to effectively integrate into the contemporary forest planning and decision making process. In response to the need for better integration of these important resources into forest planning more objective, quantitative methods for scenic quality and visual impact assessment are being developed. Among the more

successful efforts is the public perception-based or "psychophysical" method for assessing scenic quality.

The Scenic Beauty Estimation Method, introduced by Daniel and Boster (1976) assesses scenic beauty in terms of the perceptual judgments of observer panels representative of forest visitors and the general public. Observers are sampled from the general public or some other population of interest and asked to indicate their judgments and preferences for different forest scenes representative of forest conditions of interest. Forest areas are typically represented by color slides or prints and respondents indicate their judgments using a 10-point rating scale. Responses of a number of observers are subjected to a psychometric scaling routine and then aggregated to provide a standardized (interval scale) quantitative index of preference or perceived quality.

The basic SBE methodology has been applied in a number of environmental assessment contexts (e.g., Daniel, et al, 1973; Kaplan, et al, 1972; Peterson, 1967; Shafer, 1964; Shafer & Richards, 1974; Zube, 1974). Recent applications (e.g., Benson & Ullrich, 1981; Brown & Daniel, 1984; Buyoff, et al, 1982; Schroeder & Daniel, 1981) have shown the method to be reliable for gauging the effects of forest conditions and management practices on public perception of scenic beauty of forest areas. The SBE approach, then, appears to be the best available method for relating the effects of WSB damage and management options to impacts on forest scenic and recreation resources.

Method

The basic research strategy for the present studies followed that already established and tested in the context of other "Scenic Beauty Estimation" applications. Forest areas exhibiting host and WSB damage characteristics of interest were selected and systematically inventoried and photographed. Color slide photos were inspected and labeled and subsequently shown to groups of observers who rated the Scenic Beauty of the forest areas represented by the slides.

Sites in northern New Mexico were selected to represent an array of forest and WSB damage characteristics. Each site was systematically inventoried and photographed. Separate sets of color slides were developed to represent the "near view" perspective, where the viewer is close to and within the forest canopy, and the "vista" perspective, where the viewer is more distant and is looking over a larger expanse of forest canopy. Ratings were scaled to yield interval scale "Scenic Beauty Estimates" or SBEs (Brown and Daniel 1984; Hull et al, 1984) which were then related to the inventoried forest characteristics, including the level of WSB defoliation and

mortality evidenced at the site.

Study sites-- All sites for this study were in western spruce budworm host-type forests similar to those near major developed recreation and tourist areas. An effort was made to select sites that were representative of near view and vista scenes experienced by visitors and residents of major recreation areas, and that represented a range of existing budworm induced defoliation and mortality. Local forest service personnel were relied upon for suggestions of appropriate sample sites. A further consideration in site selection was to coordinate with the related project being conducted in the same areas by Tom Swetnam of the Tree Ring Laboratory at the University of Arizona.

A total of 21 separate sites were selected, including replications of the 12 sites selected and inventoried by Swetnam (see Attachment A). For these intensively sampled sites, separate color slide sets were collected to represent the "near view" perspective, where the viewer is close to and within the forest canopy, and the "vista" perspective, where the viewer is more distant and is looking over a larger expanse of forest canopy. In addition to these detailed inventory sites, vista representations of selected sites in Hondo Canyon (Taos Ski Valley), Rio Pueblo Canyon (Sipapu Ski Area), and in the Jemez District of the Santa Fe National Forest were also collected and documented.

Inventory procedures--Sites were defined as relatively homogenous contiguous stands of trees falling within the visible area of a selected vista or viewpoint. Within each intensive site five or six inventory points were located at approximately equal distances along a linear transect. Transects were generally oriented up-slope and across the site, extending from lower left to upper right within the "viewshed" (visible area) of a selected vista point. Viewpoints, viewsheds and sample sites were all mapped and documented (see Attachment B). At each inventory point four randomly oriented (near-view) color slides were taken, along with a set of physical and biological measures (see Attachment C for a copy of the inventory form used). Measures obtained for each inventoried site are summarized below.

A 20-factor prism was used to establish a variable size sample plot for tallying trees greater than 5.0 inches DBH. Smaller diameter trees, grouped into three height categories (less than 2.0 feet, 2 to 4 feet, and greater than 4 feet), were counted within a circular fixed plot of 1/100th acre (11.7 foot radius). All trees within the sample were distinguished by:

1) species;

2) condition (dead more than 5 years, dead less than 5 years, living);

3) crown foliage class (0 = total defoliation, no foliage present, 1 = less than 10% potential foliage present, 2 = 10 to 20%, 3 = 20 to 40%, 4 = 40 to 70 %, 5 = 70 to 99%, and 6 = no visible defoliation); and

4) damage class (no damage, budworm, bark beetle, or undetermined).

5) canopy position (highest story, second story, or third story);

In addition, approximately 25% of the tallied trees at each site were measured for height, age, radial growth (in mm) in the last ten years and were photographed to document crown foliage condition.

Vegetative ground cover was assessed at each sample point using a fixed 1.0 square yard sampling frame. Percent canopy cover was visually estimated and height was measured for grasses, forbs and shrubs for each sample frame. At random, approximately 50% of the sample frames were clipped and bagged (grasses, forbs and shrubs separately) for later weighing and for mathematical calibration and conversion of the visual cover estimates to per acre dry weights.

Data from the biological inventories was reviewed and edited and entered into a computer data base for further analysis. This effort was coordinated with the Swetnam project to insure compatibility and ability to share the resulting data base between the two projects.

Color slides and perceptual ratings--A total of over 550 near view slides were collected between the Swetnam inventory and the current project. Slides were collected during July of 1987. Four slides were taken at each sample point within each selected stand, the first at a randomly determined compass heading, and the three subsequent slides at successive 90-degree increments from the first. All near view slides were taken at eye level and followed the procedures detailed in Brown and Daniel (1984).

Over 50 vista slides were also collected in July of 1987, and 30 of these were repeated under snow conditions in March of 1988. Vista photos included distant and midground views of each inventoried site, with separate views to represent different viewpoints (or viewer perspectives) and different sun lighting angles (times of day). All slides were inspected, individually labeled and filed.

In separate studies, all near view and vista summer slides were shown to panels of observers sampled from undergraduate college students at the University of Arizona. At least 30 observers provided scenic beauty ratings (on a ten-point scale) of each slide, following procedures described in Daniel and Boster (1976) and Brown and Daniel (1984). Ratings were inspected and entered into computer data files for analysis by a set of psychometric

procedures to yield standardized indices of perceived scenic beauty.

Results and Discussion

The primary goal of this initial study was to develop and test procedures and to begin to develop a suitable data base for assessing and modeling the visual/scenic beauty impacts of WSB damage on forest areas. Both near-view perspectives, where the observer is within the canopy of the forest and viewing a relatively small part of the area at one time, and vista perspectives, where the viewer is outside the forest canopy and looking over a much larger area of forest, were investigated. Visual characteristics were recorded by color-slides and relevant forest physical and biological characteristics were represented by a variant of conventional forest inventory techniques, as described above.

Forest inventory--The results of the inventory for the intensive study sites are presented in Attachment D. Values for each point within each stand/sample area are presented for each of the inventory variables. Tree size classes for trees 5.0 inches DBH and greater were formed by aggregating the tree tallies at each sample point into 2-inch diameter classes. Trees less than 5.0 inches DBH were counted in a 100th acre plot for three classes, less than 2-feet height, 2 to 4-feet height, and greater than 4-feet height. Vegetative ground cover data are presented separately at the end of the tree data file.

Near-View SBE analysis--Ratings for near view and for representations of the forest sample areas were subjected to the Scenic Beauty Estimation scaling procedures described in Brown and Daniel (1984). Individual sample point SBEs for the each near-view perspective scene were computed, along with the other scaling options offered in the RMRATE computer package (Daniel, Brown, Schroeder and Brink, in preparation). The results of the SBE scaling analyses for the near-view scenes are presented in Attachment E. Inter-correlations among the different near-view rating groups and appropriate reliability coefficients for each groups are presented in Table 1.

The obtained correlations between groups and the individual group reliability coefficients are consistent in indicating that there was good agreement between observers in the ratings of the near-view slides.

Inspection of individual slides of forest scenes and a preliminary analysis of relationships between scene SBEs and selected forest inventory features revealed that major forest characteristics were most influential in affecting perceived scenic beauty. That is, the density of the stand, the size of the trees and the slope of the area all influenced ratings. Defoliation conditions affected SBEs within the same or similar stands, with more defoliation resulting in generally lower SBEs.

Table 1
Reliability Coefficients and "Baseline"
Correlations for New Mexico WSB Study

Run #	Reliability Coefficient	Baseline Correlations Run 1	Run 2	Run 3	Run 4
1	.89		.73	.84	.86
2	.93			.89	.91
3	.91				.92
4	.95				

Note: Reliability coefficients are intra-class reliability coefficients, and "Baseline" coefficients are based on the common slides that were judged by each of the independent groups of observers in the four runs (see Brown and Daniel, 1984).

Some stands that had suffered extensive mortality were rated lower in scenic beauty, even though the tree sizes and densities in the stand would have otherwise been expected to produce higher SBEs.

Further analysis will be required, and more samples of forest sites with different levels of WSB damage are needed. The present data, however, does indicate that increasing amounted of WSB defoliation, and especially mortality of larger trees, results in decreases in the perceived scenic beauty of the forest stands as seen from the near-view perspective.

Vista SBE analysis--The results of the SBE analysis for the vista scenes are presented in Attachment F. While specific forest characteristics were important factors affecting SBEs in near-view scenes, perceived scenic beauty of vista views tends to be more complex. Variables such as scene composition (e.g., percent of sky, sky condition, lighting/shadow, etc.) tend to exert substantial influence over perceptual judgments. Further, the forest characteristics that are important tend to be much more complex. Spacial/topographic distribution of forest features, including insect damage, within the particular view has important effects. The perceptual effects of all of these features of the scene may change with the time of day (sun lighting angle) and with changes in the viewer's perspective (angle of view). As a result, it was very difficult to impossible to determine with any precision the extent to which WSB damage, alone, contributed to the differences in perceived scenic beauty between the vista scenes.

Investigations of Computer Simulation Methods for Representing and Manipulating WSB Damage in Scenic Forest Vistas

Initial investigation of vista scenic beauty values for the sites sampled suggested that the large scale scene composition variables (e.g., general topography, sky amount and cloud conditions, distance to forest canopy, openness and flatness of foreground) tended to be very powerful determinants of scenic beauty judgments, and very likely disguised any effects of defoliation or mortality caused by WSB. A need was identified for better control of these large scale variables so that the effects of WSB damage could be more precisely studied. In that context, the research plan was amended to include investigation of computer-based methods for systematically varying defoliation while other scene composition factors were held constant. Objectives 6 and 7 were added to the project.

Two computer-based methods for representing and manipulating forest vista scenes were compared. The first method is a computer simulation procedure based on the PREVIEW and PERSPECTIVE PLOT programs that have been developed and used by Forest Service landscape architects. With recently developed improvements to this method, it is possible to generate computer sketches of forest vistas that are analytically controlled by digitized topography and vegetation data (e.g., timber stand and pest damage sketch maps). Basically, these programs take map data of topography and vegetation for a prescribed area and produce a simulated perspective view of the area as it would be seen from a designated viewpoint. It is possible in this system to use color or tree symbols to represent areas in a scene in which different levels of defoliation and mortality are located.

The second scene simulation method evaluated is based on digital image processing and "paint program" technology that has recently become available and easier to use on micro-computer systems. The basic approach here is to photograph and digitize individual forest scenes, and then to use image processing software to modify features of the scene. Forest scenes with little or no visible defoliation can be modified by shading sections of the forest canopy grey, to simulate WSB defoliation and mortality. Alternatively, scenes evidencing substantial damage can be "repaired" by shading grey areas green, or by substituting (through "cut-and-paste" routines) healthy trees for dead or defoliated trees.

PERSPECTIVE PLOT METHODS

A modified version of the basic PREVIEW program, with the enhancement of a direct link to both topographic and vegetation

GIS data bases, is currently operational at the University of Arizona Computer Aided Engineering Laboratory with remote access from the Scenic Beauty Laboratory on a Techtronics color graphics monitor. The "Visual Impact Assessment Module" program was developed at the University of Arizona by Itami and Daniel (1987), and has subsequently been integrated into the IPIAS decision support system by FPM/MAG. Software to implement a color distinction between healthy and dead trees ("red tops" caused by mountain pine beetle) is still under development at Fort Collins. When complete, it would be possible to extend the "red tree" version of the system, which is designed to display projected MPB mortality, to display "grey" trees, as is appropriate for indicating WSB defoliation.

While the computer perspective systems, such as PERSPECTIVE PLOT or the modified version in the IPIAS program, provide for excellent analytic control of the features of the scene (e.g., the number and location of defoliated trees in the scene), the actual simulated scene is only schematic. Terrain is represented by a "fish net" grid and trees are represented by simple line-drawing symbols. These schematic representations are sufficient for professional analysis, but they are not suitable for presentation to the public for assessments of perceived scenic quality.

DIGITAL IMAGE SCENE SIMULATIONS

Digital image approaches to simulating forest scenes typically begin with an actual color-slide or other photograph of the scene. This photo is scanned by a digital color video camera, or by an analog camera system and then the image is "captured" in digital format by special software. Once the image is digitized, special image processing, paint and cut-and paste routines can be used to manipulate the image. For example, selected trees in a forest scene can be changed in color from green to grey, removed altogether, or replaced by other trees "cut" from other parts of the scene or from another digitized scene. The initial digitized image, and any manipulated images, may be displayed directly on a suitable color TV monitor, or it can copied on to video tape or a color slide or hard-copy format.

The key advantage of digital image processing procedures is that very realistic representations are achieved; the resolution and color quality of the manipulated images are comparable to that of standard color television. Simulations can be displayed directly on high-resolution color TV monitors, video taped (e.g., on half-inch VHS cassettes) or produced as color slides. Tests to date, however, have indicated that the secondary representation media (video tape and color slides) are inferior to the direct presentation of the image files by way of a high resolution color monitor. The other media may be improved by more careful and systematic color control procedures and by the use of more expensive equipment and processes. For the present time,

however, the direct presentation approach seems most suitable for the goals of the current research program. The realism and presentation format options make this simulation approach most suitable for public observers' perceptual evaluations, and future improvements in the technology will likely make it more easily used in an operational forest management and planning context.

The simulations used to test and evaluate the image processing approach were produced in cooperation with the Landscape Simulation Laboratory at the University of Illinois (Brian Orland, Department of Landscape Architecture). By a sub-contract agreement, a set of four pilot scenes from the northern New Mexico studies were manipulated and made available on video tape and on color slides. Both "greening" of heavily damaged scenes and "greying" of undamaged scenes have been accomplished. The initial simulations are very encouraging and confirm that realistic images can be produced.

SIMULATION METHODS COMPARED

Initial evaluation of simulations from the perspective view system and from the digital image processing system indicates that both have significant advantages and disadvantages for the study of WSB damage effects on public perception of forest scenic beauty. The perspective view system has the advantage of stronger analytic control and linkage to digitized data (terrain, vegetation and pest damage) that would typically be available from inventory or forest or pest simulation model projections. The actual simulations, however, are very abstract and schematic, and are not suitable for presentation to untrained public audiences. The digital image processing system produces very realistic simulations and seems very flexible with regard to the scene features that can be manipulated. The key disadvantage of this system is that it currently offers very little in the way of analytic control; the manipulation of features (e.g., the amount and location of defoliation in a scene) is largely a visually guided artistic process. Establishing strong links between inventory data bases or forest growth and yield or pest damage models, as are available now with computer perspective view systems, will require considerable additional conceptual and software development.

Based on this assessment of the current state of the art of these two approaches for simulating the effects of WSB damage on forest scenes, neither system seems sufficient. A fruitful approach, which is recommended for future research and development effort, is to combine both methodologies. The perspective view system could be used to produce analytically controlled, calibrated simulations of existing or projected WSB damage for individual forest scenes. Schematic perspective views could then be used by a professional analyst to guide specific manipulations of digitized images of the modeled scene.

One exciting scenario would have a forest simulation model (e.g., PROGNOSIS with WSB extension) project WSB damage and mortality for stands within a selected forest scene. These projections would then be used to produce calibrated perspective views of the modeled area. The perspective views would, in turn, be used to guide manual image processing manipulations of a digitized photo-image of the scene. The manipulated images could be shown to public panels who rate or otherwise indicate the relative perceived scenic beauty of the scenes. The advantage here, of course, is that large scale scene characteristics could be completely controlled while only the extent and location of WSB damage was systematically varied. This would greatly improve the ability to determine (quantitatively) the effects of WSB damage on scenic values in forest landscape vistas; scenic beauty models based on these relationships would enable predictions of the scenic consequences of different WSB damage scenarios associated with modeled alternative management actions.

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ATTACHMENT A
NEW MEXICO WSB STUDY
INTENSIVE INVENTORY SAMPLE LIST WITH MAPS

Plot Number	Name	Forest	District	Inv. Date
TD 01	Fawn Lakes	Carson	Questa	7/09/87
TD 02	Fawn Lakes CG	Carson	Questa	7/10/87
TD 03	Fawn Lakes CG-E	Carson	Questa	7/10/87
TD 04	West of Moly	Carson	Questa	7/11/87
TD 05	West of Moly-2	Carson	Questa	7/11/87
TD 06	Moly Corp Gate	Carson	Questa	7/13/87
TD 07	Golden Eagle Ldg	Carson	Questa	7/14/87
TD 08	Singing Riv Rch-1	Carson	Questa	7/15/87
TD 09	Singing Riv Rch-2	Carson	Questa	7/16/87
TS 01	West Vallecitos	Santa FE	Jemez	7/24/87
TS 02	Los Griegos-1	Santa Fe	Jemez	7/25/87
TS 03	Los Griegos-2	Santa Fe	Jemez	7/25/87
TS 04	Peralta High	Santa Fe	Jemez	7/24/87
TS 09	Angostora	Carson		7/18/87
TS 10	Flechado	Carson		7/19/87
TS 11	Policarpio	Carson		7/18/87

SAMPLING LOCATION REFERENCE DATA

PLOT LOCATION (STAGE I)

PLOT NO. 01 MAGNETIC ~~DECLINATION~~ MAG Bearing 7°

SEC. ____ T. ____ R. ____ ____ P.M. LOCATION FAWN LAKES - RED RIVER

SRP SPECIES ____ DBH ____ AZIMUTH TO RP ____ DISTANCE ____

RP SPECIES ____ DBH ____ AZIMUTH TO PLOT CENTER ____ DISTANCE ____

WT. NO. 1 SPECIES ____ DBH ____ AZIMUTH FROM PLOT CENTER ____ DISTANCE ____

WT. NO. 2 SPECIES ____ DBH ____ AZIMUTH FROM PLOT CENTER ____ DISTANCE ____

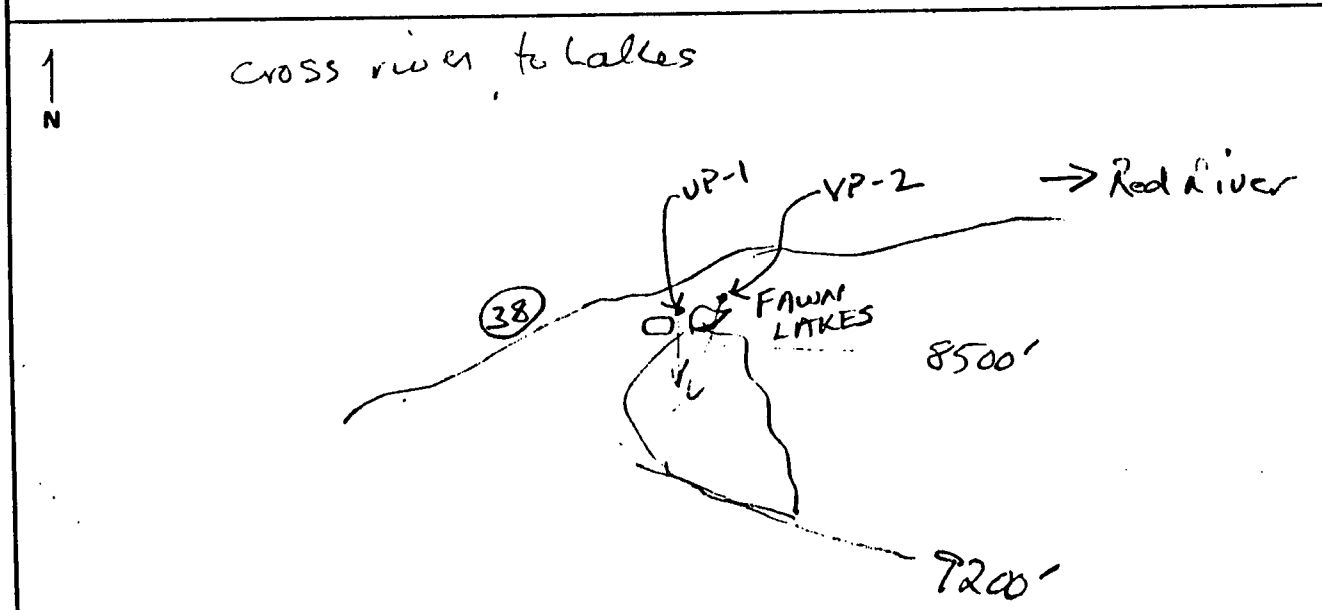
POINT LOCATION (STAGE II)

STAND NO. ____

RP SPECIES ____ DBH ____ AZIMUTH TO POINT NO. ____ IS ____ DISTANCE ____

TRAVEL DESCRIPTION ____

PLOT/POINT LOCATION SKETCH



N.H. - RED RIVER QUAD

LEGEND

115	Road, Improved
	Road, Logging
85	Trail
	Drainage, Intermittent
	Ridge
x x	Fence
	Cattleguard
RP	Reference Point (RP)
SRP	Supplemental RP
PC	Plot Location Center
→	Direction of Travel
•3	Point and Point Number
97°	Azimuth
CH	Chains

SAMPLING LOCATION REFERENCE DATA

PLOT LOCATION (STAGE I)

PLOT NO. 02 MAGNETIC DECLINATION _____

SEC. _____ T. _____ R. _____ _____ P.M. LOCATION FAWN LAKE'S CG

SRP SPECIES _____ DBH _____ AZIMUTH TO RP _____ DISTANCE _____

RP SPECIES _____ DBH _____ AZIMUTH TO PLOT CENTER _____ DISTANCE _____

WT. NO. 1 SPECIES _____ DBH _____ AZIMUTH FROM PLOT CENTER _____ DISTANCE _____

WT. NO. 2 SPECIES _____ DBH _____ AZIMUTH FROM PLOT CENTER _____ DISTANCE _____

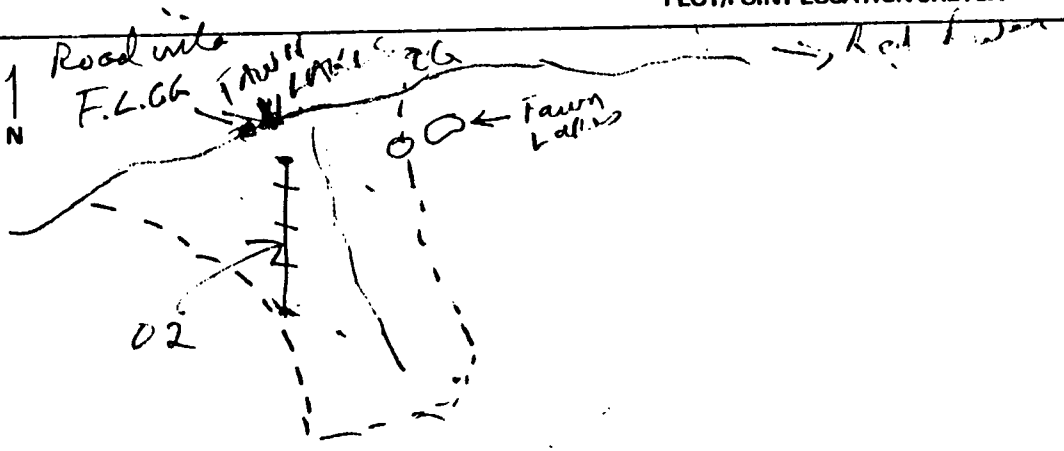
POINT LOCATION (STAGE II)

STAND NO. _____

RP SPECIES _____ DBH _____ AZIMUTH TO POINT NO. ___ IS _____ DISTANCE _____

TRAVEL DESCRIPTION _____

PLOT/POINT LOCATION SKETCH



2 VISITS · #1 = TO N.E. SLOPE
= FAWN LAKE CG

RED RIVER (N.M.) QUAD

LEGEND

115	Road, Improved
	Road, Logging
85	Trail
	Drainage, Intermittent
	Ridge
x x	Fence
	Cattleguard
RP	Reference Point (RP)
SRP	Supplemental RP
PC	Plot Location Center
	Direction of Travel
3	Point and Point Number
97°	Azimuth
CH	Chains

(1) 92°
(2) } – CENTER SAME SCENE
(3)

L

SAMPLING LOCATION REFERENCE DATA

Red River – Fawn Lakes CG – East

PLOT LOCATION (STAGE I)

PLOT NO. 03 MAGNETIC DECLINATION _____

SEC. _____ T. _____ R. _____ _____ P.M. LOCATION _____

SRP SPECIES _____ DBH _____ AZIMUTH TO RP _____ DISTANCE _____

RP SPECIES _____ DBH _____ AZIMUTH TO PLOT CENTER _____ DISTANCE _____

WT. NO. 1 SPECIES _____ DBH _____ AZIMUTH FROM PLOT CENTER _____ DISTANCE _____

WT. NO. 2 SPECIES _____ DBH _____ AZIMUTH FROM PLOT CENTER _____ DISTANCE _____

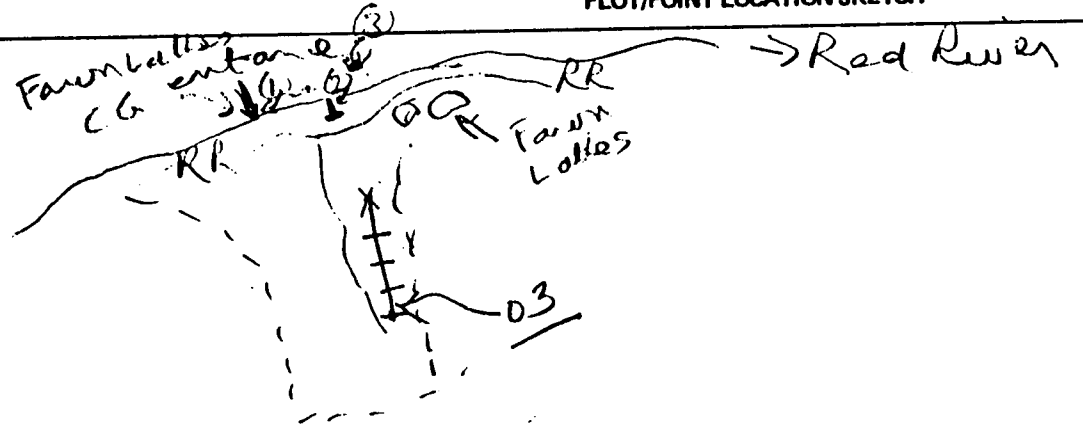
POINT LOCATION (STAGE II)

STAND NO. _____

RP SPECIES _____ DBH _____ AZIMUTH TO POINT NO. ___ IS _____ DISTANCE _____

TRAVEL DESCRIPTION _____

PLOT/POINT LOCATION SKETCH



LEGEND

115	Road, Improved
	Road, Logging
85	Trail
	Drainage, Intermittent
	Ridge
—x—x—	Fence
	Cattleguard
RP	Reference Point (RP)
SRP	Supplemental RP
PC	Plot Location Center
	Direction of Travel
•3	Point and Point Number
97°	Azimuth
CH	Chains

Fawn Lakes C.G. – East
View of west aspect – dry, little veg. cover

SAMPLING LOCATION REFERENCE DATA

PLOT LOCATION (STAGE I)

PLOT NO. 04 MAGNETIC DECLINATION _____

SEC. _____ T. _____ R. _____ P.M. LOCATION RED RIVER - WEST OF MOUTH

SRP SPECIES _____ DBH _____ AZIMUTH TO RP _____ DISTANCE _____

RP SPECIES _____ DBH _____ AZIMUTH TO PLOT CENTER _____ DISTANCE _____

WT. NO. 1 SPECIES _____ DBH _____ AZIMUTH FROM PLOT CENTER _____ DISTANCE _____

WT. NO. 2 SPECIES _____ DBH _____ AZIMUTH FROM PLOT CENTER _____ DISTANCE _____

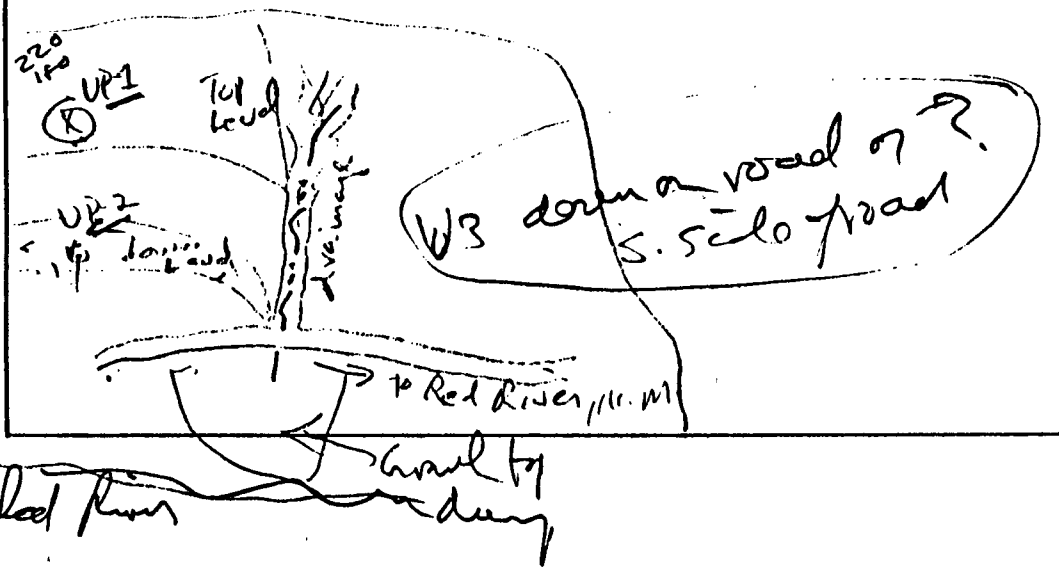
POINT LOCATION (STAGE II) View points are N. and above road on old mtg dump, W. side of drainage.

STAND NO. _____

RP SPECIES _____ DBH _____ AZIMUTH TO POINT NO. ___ IS _____ DISTANCE _____

TRAVEL DESCRIPTION _____

PLOT/POINT LOCATION SKETCH



LEGEND

- Road, Improved
- Road, Unimproved
- Trail
- Drainage, Intermittent
- Ridge
- Fence
- Cattleguard
- RP — Reference Point (RP)
- SRP — Supplemental RP
- PC — Plot Center
- Direction of travel
- Point and number
- 97° — Azimuth
- CH — Chain

SAMPLING LOCATION REFERENCE DATA

PLOT LOCATION (STAGE I)

PLOT NO. 08 MAGNETIC DECLINATION _____

SEC. _____ T. _____ R. _____ _____ P.M. LOCATION CABRESTO CANYON - SINGING RIVER RANCH

SRP SPECIES _____ DBH _____ AZIMUTH TO RP _____ DISTANCE _____

RP SPECIES _____ DBH _____ AZIMUTH TO PLOT CENTER _____ DISTANCE _____

WT. NO. 1 SPECIES _____ DBH _____ AZIMUTH FROM PLOT CENTER _____ DISTANCE _____

WT. NO. 2 SPECIES _____ DBH _____ AZIMUTH FROM PLOT CENTER _____ DISTANCE _____

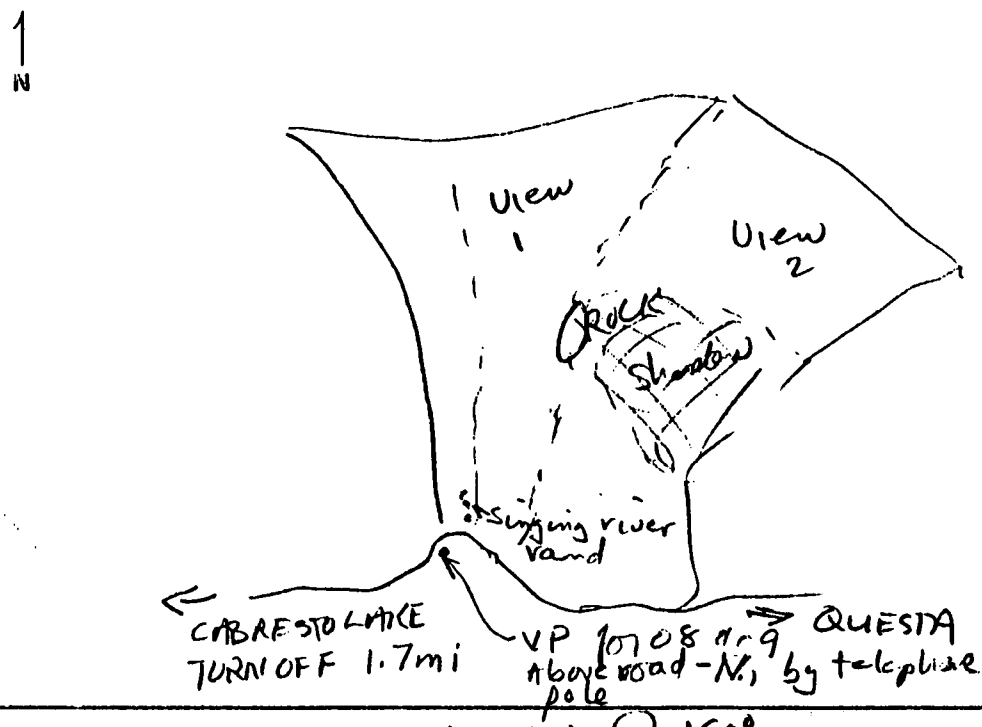
POINT LOCATION (STAGE II)

STAND NO. _____

RP SPECIES _____ DBH _____ AZIMUTH TO POINT NO. ___ IS _____ DISTANCE _____

TRAVEL DESCRIPTION _____

PLOT/POINT LOCATION SKETCH

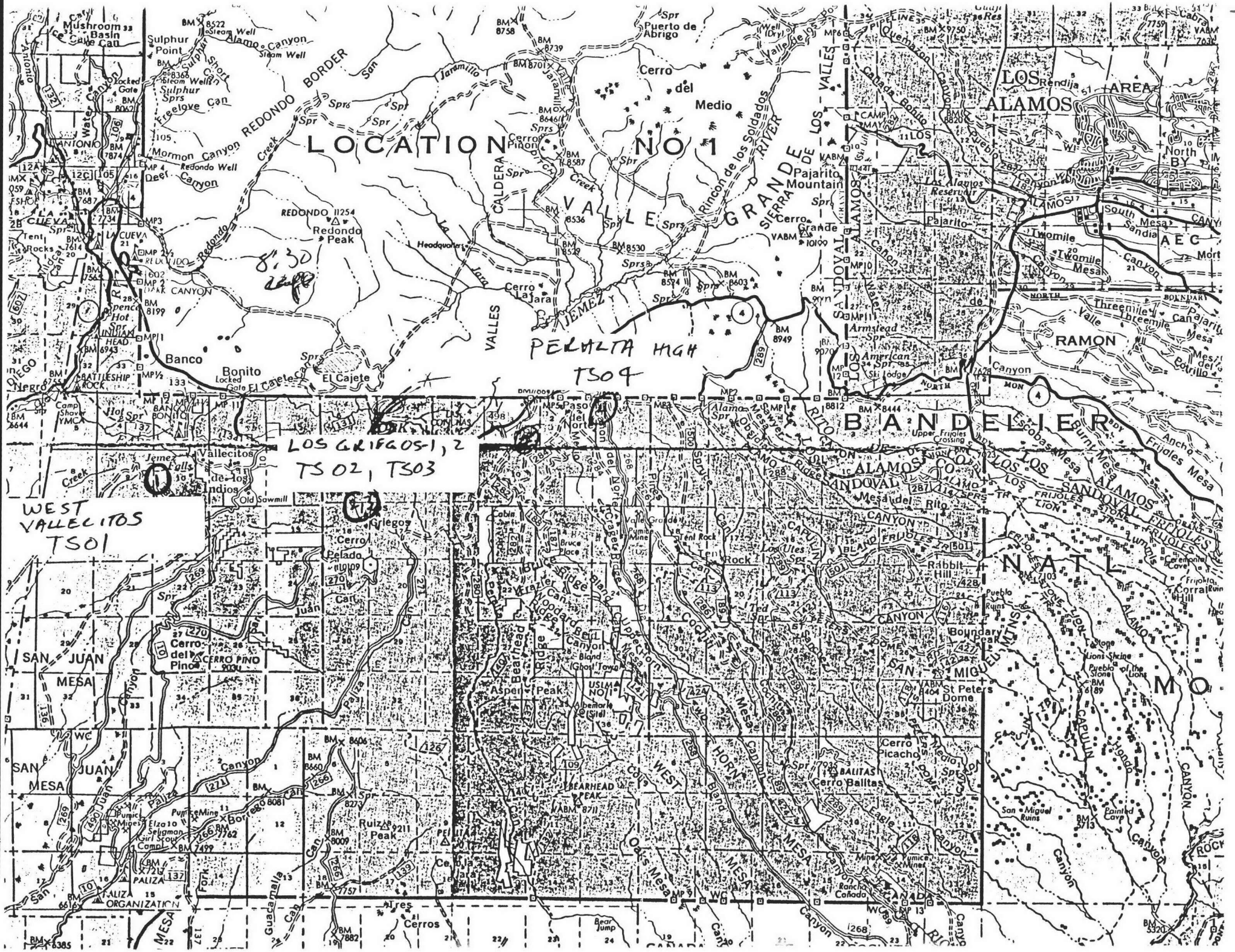


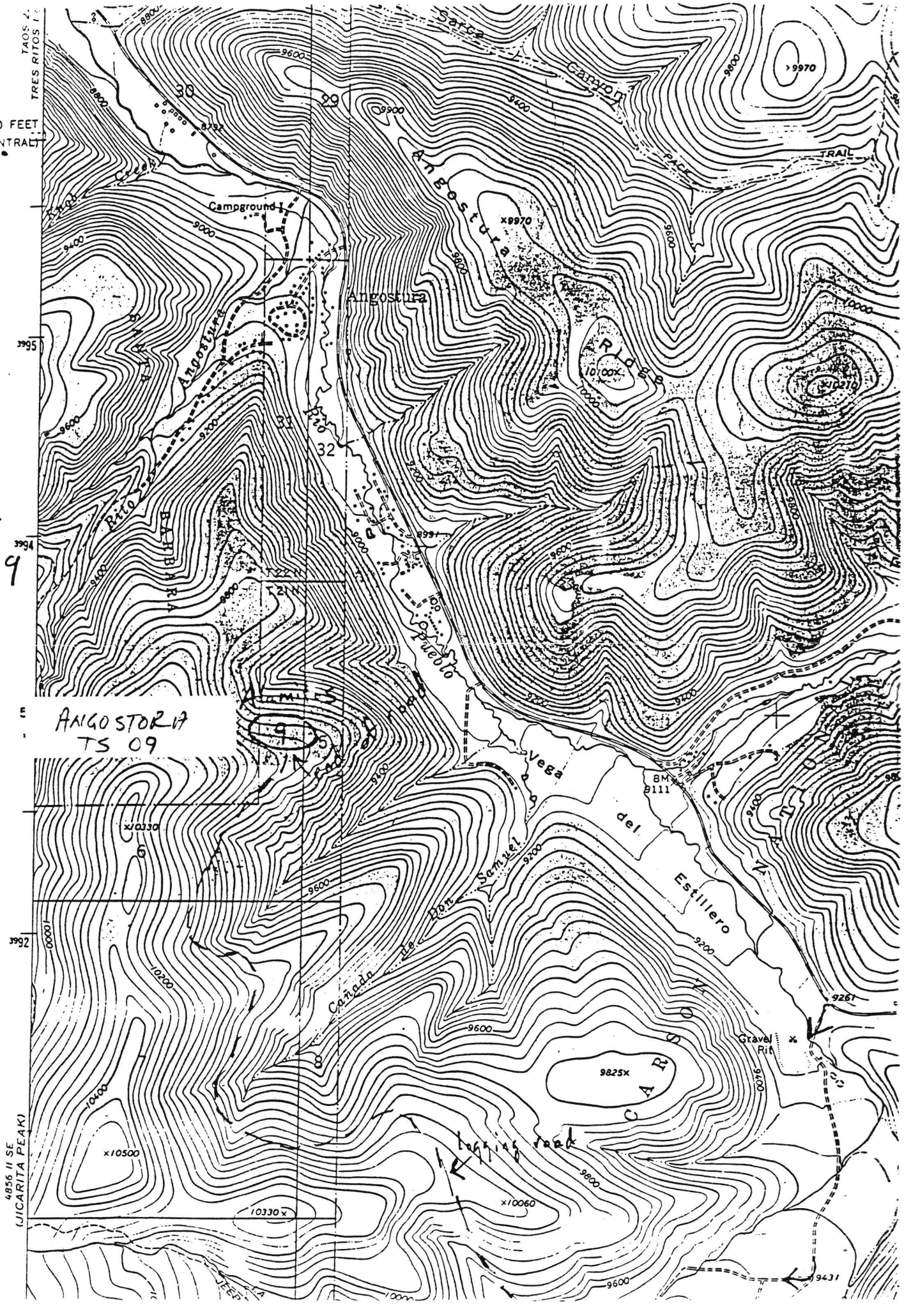
View 1 @ 180°

View 2 @ 195°

LEGEND

115	Road, Improved
	Road, Logging
85	Trail
	Drainage, Intermittent
	Ridge
--x--x--	Fence
	Cattleguard
RP	Reference Point (RP)
SRP	Supplemental RP
PC	Plot Location Center
	Direction of Travel
•3	Point and Point Number
97°	Azimuth
CH	Chains


LOCATION NO 1
LOS GRIEGOS-1, 2
TS02, TS03
PERALTA HIGH
TS04
WEST VALLECITOS
TS01
LOS ALAMOS AREA
BANDELIER
NATL MO
RAMON
REDONDO BORDER
VALLE GRANDE
SIERRA DE LOS VALLES
CALDERA
RIO DE LOS VALLES
RITO DE LOS FRIJOLES
Redondo Peak
REDONDO 11254
Cerro Grande
VABM 10199
Pajarito Mountain
Cerro del Medio
Puerto de Abrigo
Cerro Pelado
CERRO PINO
Rabbit Hill
Boundary Peak
St Peters Dome
Cerro Picacho
Cerro Ballitas
BEARHEAD PEAK
Aspen Peak
Ruiz Peak
Tres Cerros
Banco Bonito
El Cajete
Vallecitos de los Indios
Jemez Falls
Redondo Creek
Sulphur Point
Mushroom Basin
Mormon Canyon
Deer Canyon
Freelove Can
Short Can
Water Canyon
Alamo Canyon
Jaramillo
Cerro Pinon
Cerro Tent Rock
Pajarito
Armstead Spr
Los Alamos Reservoir
Twomile Mesa
Threemile
South Mesa
Sandia
Mesa del Rio
Mesa del Estrillo
Ancho
Frijoles Mesa
Burnt Mesa
Escobas Mesa
Los Alamos Canyon
Los Frijoles Canyon
Capulin Canyon
Cochiti Mesa
Horn Canyon
Oaks Mesa
Guaje Canyon
Pajarito Canyon
Rendija Canyon
Canada Bonito
Canada de Cochiti
Ranchito Canada
Cerro La Jara
Headquarter
Jara Creek
Redondo Creek
Valle Jaramillo
Valle Toledo
Valle Grande
Valle de los Posos
Valle Redondo
Valle Toledo
Valle Jaramill


Alamitos
stand 9
ANGOSTURA
TS 09
Sarca Canyon
Angostura Ridge
Angostura
Campground
Rito Angostura
Rito Barbara
Rito Arroyo Pueblo
Vega del Samuel
Cañada de Don Estillero
Gravel Pit
Lookout rock
CARSON
1 860 000 FEET
(CENTRAL)
TAOS 2
TRES RITOS 1
4856 II SE
(JICARITA PEAK)
TRAIL
JEEP TRAIL

Impacts of Western Spruce Budworm on Scenic Beauty and Recreation Resources

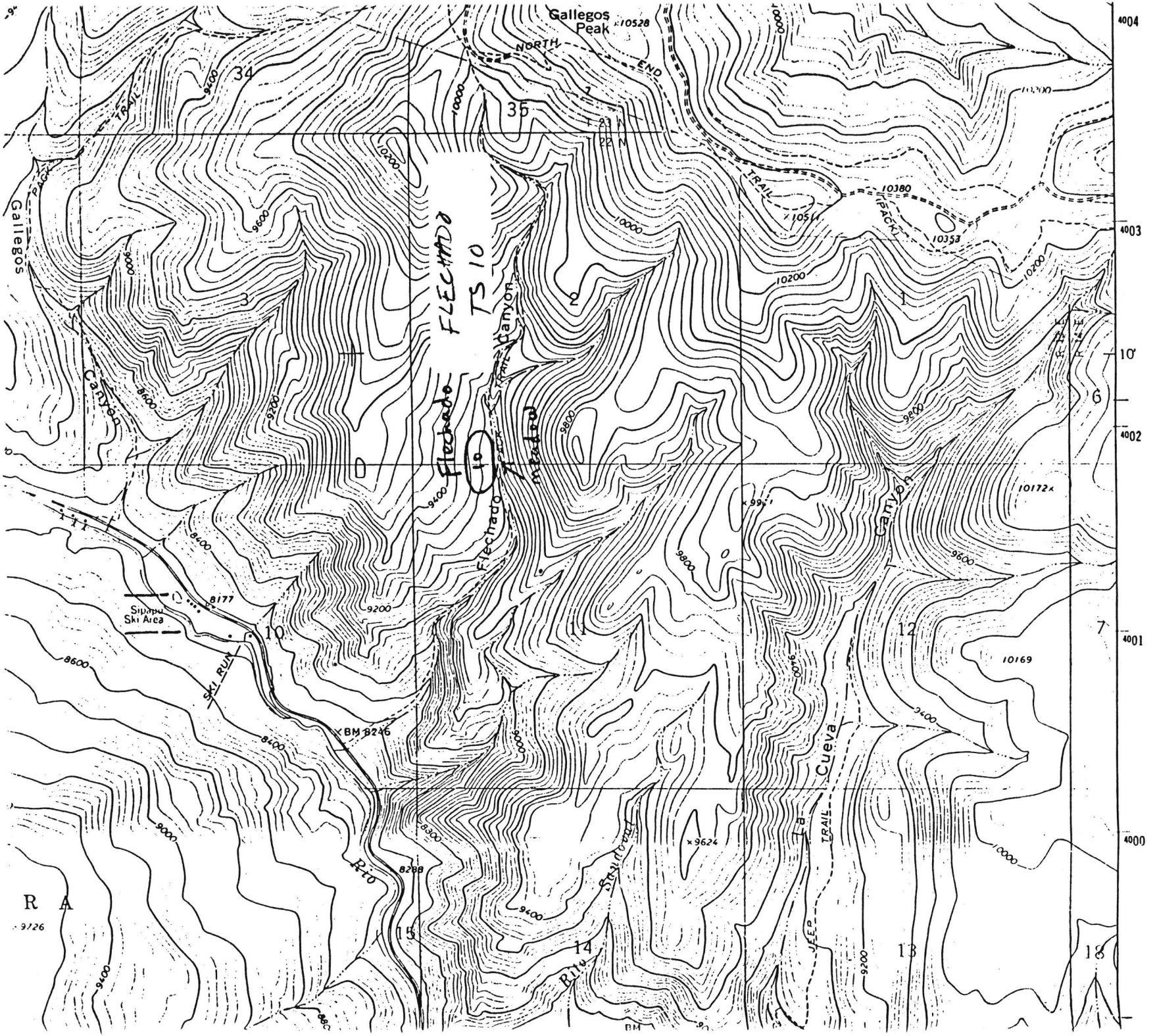
Final Report

Cooperative Research Agreement No. 28-C7-414
University of Arizona
and
Rocky Mountain Forest and Range Experiment Station
RWU 4501
USDA Forest Service

July 1, 1988

Submitted by:

Terry C. Daniel
Psychology and Renewable Natural Resources
University of Arizona


Gallegos Peak
10528
NORTH END TRAIL
Gallegos Canyon
Flechado Canyon
Flechado Peak
10380
10511
10353
10172
10169
9726
9624
8177
BM 8246
Sipapu Ski Area
SKI RUN
Cueva
JEEP TRAIL
Rio
34
35
1
2
3
10
11
12
13
14
15
18
7
6
T 23 N
T 22 N
R A
4004
4003
4002
4001
4000

3

Impacts of Western Spruce Budworm on Scenic Beauty and Recreation Resources

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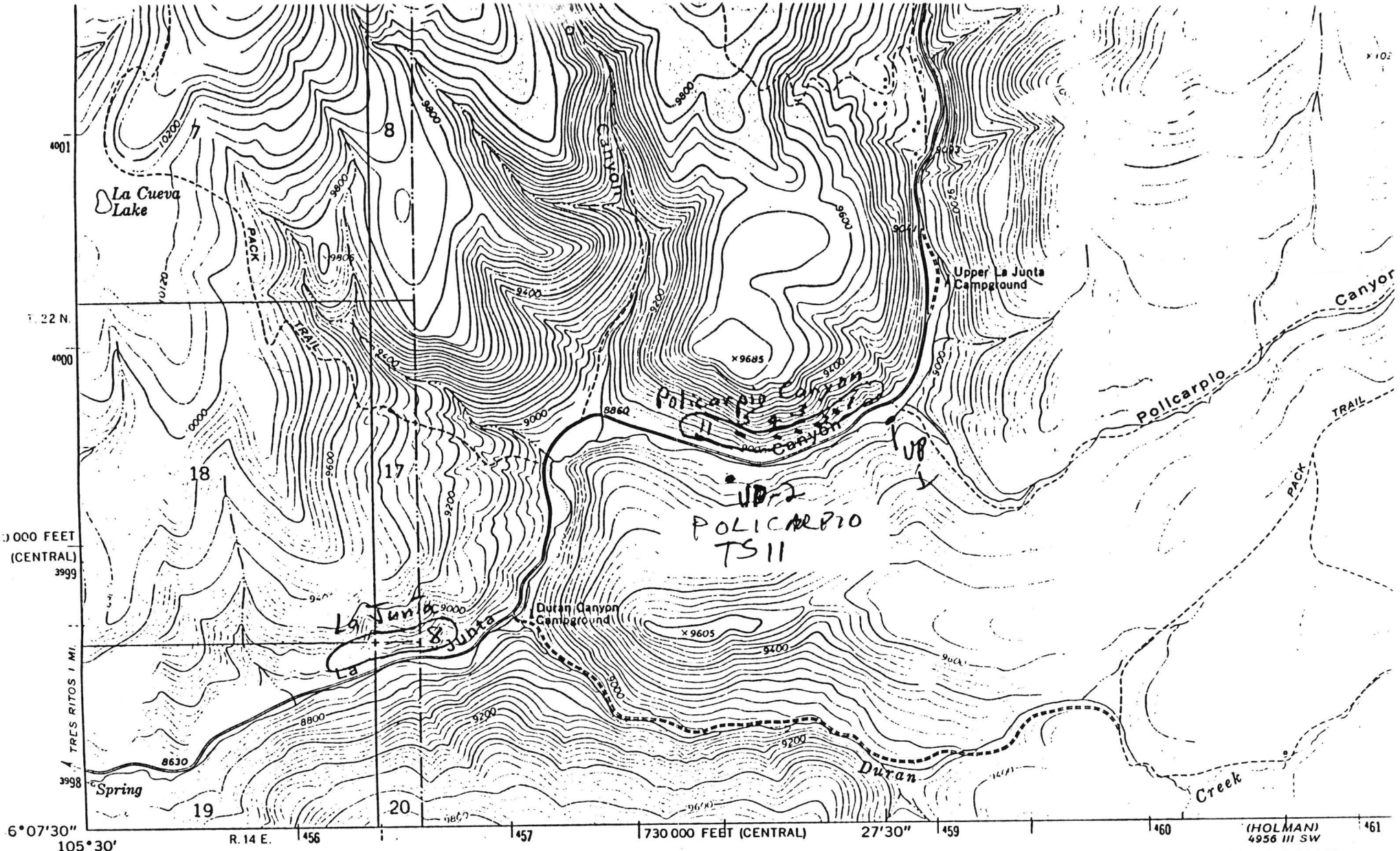

SCALE 1:24 000

1 0 1000 0 1000 2000 3000 4000

1 .5 0

CONTOUR INTERVAL 40 FEE
DATUM IS MEAN SEA LEVEL

Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

Topography by photogrammetric methods from aerial photographs taken 1964. Field checked 1965

Polyconic projection. 1927 North American datum
10,000-foot grids based on New Mexico coordinate system, central and east zones
1000-meter Universal Transverse Mercator grid ticks, zone 13, shown in blue

Where omitted, land lines have not been established

GN MN
0°15' 5 MILS
13° 231 MILS

UTM GRID AND 1965 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

Impacts of Western Spruce Budworm on Scenic Beauty and Recreation Resources

Final Report

Cooperative Research Agreement No. 28-C7-414
University of Arizona
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Rocky Mountain Forest and Range Experiment Station
RWU 4501
USDA Forest Service

July 1, 1988

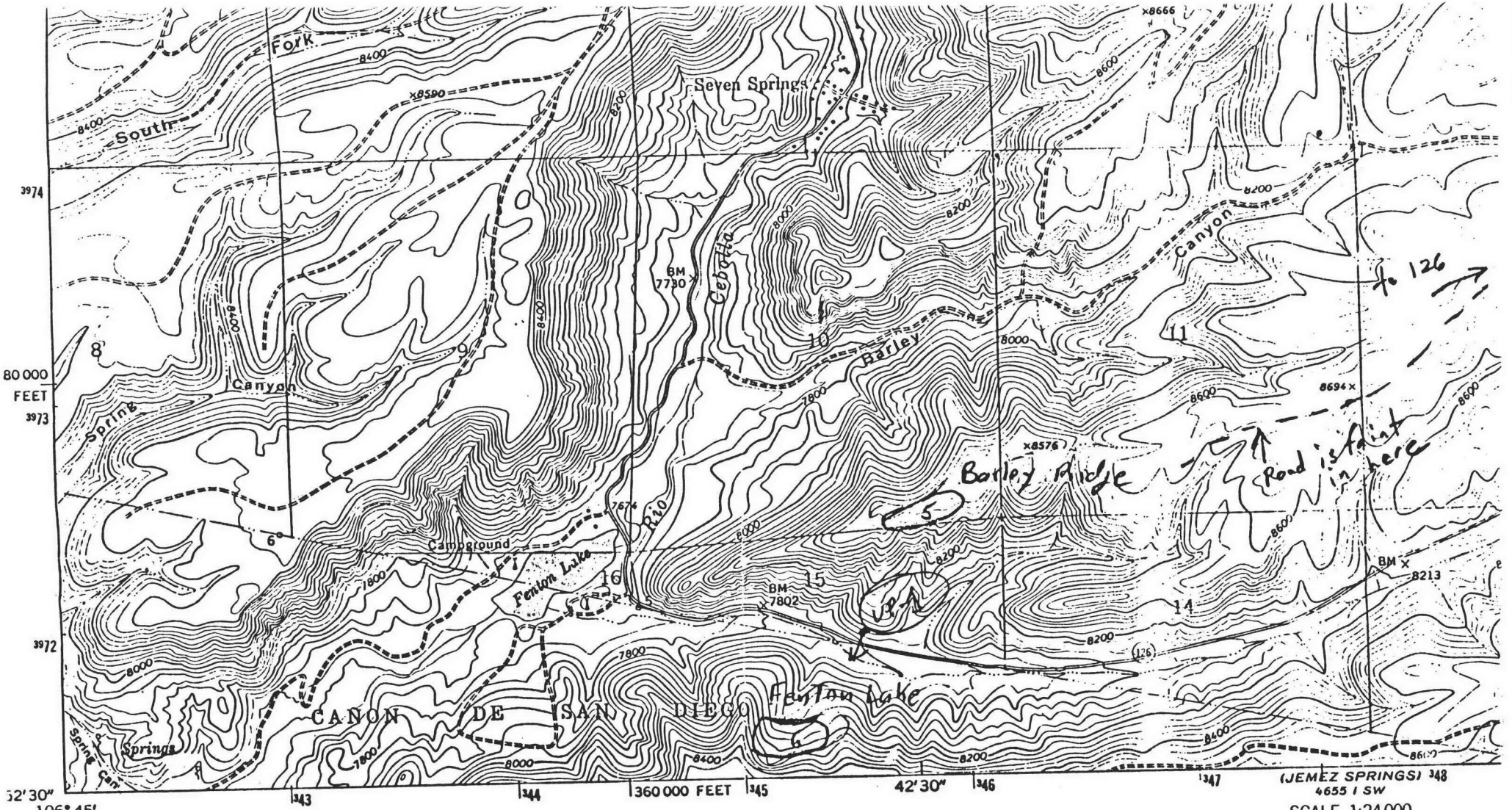
Submitted by:

Terry C. Daniel
Psychology and Renewable Natural Resources
University of Arizona

ATTACHMENT B
NEW MEXICO WSB STUDY
LIST OF VISTA POINTS

Vista Name	Forest	District	Snow Scene
Fawn Lakes	Carson	Questa	YES
Fawn Lakes CG	Carson	Questa	YES
Fawn Lakes CG-E	Carson	Questa	YES
West of Moly	Carson	Questa	YES
West of Moly-2	Carson	Questa	YES
Moly Corp Gate	Carson	Questa	YES
Golden Eagle Ldg	Carson	Questa	YES
Singing Riv Rch-1	Carson	Questa	YES
Singing Riv Rch-2	Carson	Questa	YES
West Vallecitos	Santa FE	Jemez	
Los Griegos-1	Santa Fe	Jemez	
Los Griegos-2	Santa Fe	Jemez	
Peralta High	Santa Fe	Jemez	
Angostora	Carson		
Flechado	Carson		
Policarpio	Carson		
Fenton Lake	Santa Fe		
La Junta	Santa Fe		

In addition, various vistas were taken in Rio Pueblo Canyon (Carson NF), Rio Hondo Canyon (Carson NF), and along N. M. State Route 4 in the Jemez District, Santa FE N. F. Several of the vistas listed above were resampled at different times of day and at from different vantage points.



SCALE 1:24 000

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1 .5 0

CONTOUR INTERVAL 40 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 19

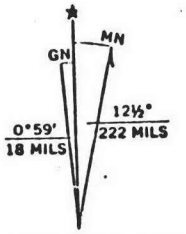
Mapped by the U.S. Forest Service
Edited, and published by the Geological Survey

Control by USGS, NOS/NOAA and USFS

Topography by photogrammetric methods from aerial photographs taken 1964-65. Field checked by USGS 1970

Polyconic projection. 1927 North American datum
10,000-foot grid based on New Mexico coordinate system, central zone
1000-meter Universal Transverse Mercator grid ticks, zone 13, shown in blue

Revisions shown in purple compiled from aerial photographs taken 1976., Map edited 1977. This information not field checked



UTM GRID AND 1977 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY

FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 802

A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS A

ATTACHMENT C
NEW MEXICO WSB STUDY
INVENTORY DATA FORMS AND CODE SHEET

USDA FOREST SERVICE

FOREST / STAND TREE RECORD SHEET

—Stage I-II—

(Ref. R3 FSH 2409.26J)

PLACE NAME _____ PAGE ____ OF ____

COMPARTMENT ____ (1-6) STAND ____ (7-10) FOREST ____ (11-12) CARD TYPE 9 (13)

DISTRICT ____ (65-66) SURVEY DATE ____ (67-70) ACRES ____ (71-73) BAF ____ (74-75) FPS ____ (76) GP ____ (77-78) PTS ____ (79-80)

DO NOT PUNCH

PUNCH FOR EACH TREE 1–13

PUNCH FOR FIRST TREE 65–80

TREE IDENTICATION						TREE MEASUREMENTS						TREE CLASSIFICATION							OTHER					REMARKS
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
POINT NUMBER	TREE NUMBER	AZIMUTH	DISTANCE	TREE HISTORY	SPECIES	DBH/DRC	TOTAL HEIGHT	NUMBER STEMS	HEIGHT GROWTH	RADIAL GROWTH	TREE AGE	AVAILABLE	INTERNAL DEFECT	TOTAL DEFECT	CROWN RATIO	CROWN CLASS	DAMAGE/DEATH	COVER CLASS	TREE POSITION	MISTLETOE	SNAG-%BARK	SITE TREE CLASS	ONGROWTH	
XXX	XX	XXX	XX	XX	XXX	XXX	XXX	XX	XXX	XX	XXX	XX	X	X	X	X	XX	XX	X	X	X	X	X	PUNCH (14-59)
14-16	17-18	19-21	22-23	24-25	26-28	29-31	32-34	35-36	37-39	40-41	42-44	45-46	47	48	49	50	51-52	53-54	55	56	57	58	59	

Item 5, Tree History. Two-digit code. Record for all live sample trees, site trees, and nonstocked point.

Code	Tree History
00	Nonstocked point
01	Live tally tree, all species
04	Dead, Salvable (Merchantable) tree:
	a. ≥5.0 inches DBH (3.0+ inches DRC for other species)
	b. Standing or down (standing only for other species)
	c. Cubic-foot volume is <68 percent rotten or missing
05	Mortality trees:
	a. ≥5.0 inches DBH (3.0+ inches DRC for other species)
	b. Standing or down (standing only for other species)
	c. Died within the last 5 years dead (natural causes)
	d. Not a rough or rotten (cull) tree at time of death (that is, >67 percent cubic-foot defect at time of death)
06	Dead, Nonsalvable (Nonmerchantable) tree:
	a. ≥5.0 inches DBH (3.0+ inches DRC for other species)
	b. Standing only
	c. Cubic-foot volume is >67 percent rotten or missing
	d. Firm enough to hold together if handled
09	Site tree

Timber Species — Item 6

Code	Common Species Name	Scientific Name
112	Apache pine	Pinus engelmannii
135	Arizona pine	Pinus ponderosa var. arizonica
746	Aspen	Populus tremula var. tremuloides
096	Blue spruce	Picea pungens
102	Bristlecone pine	Pinus aristata
116	Chihuahua pine	Pinus leiophylla
018	Corkbark fir	Abies lasiocarpa var. arizonica
740	Cottonwood	Populus sp.
202	Douglas-fir	Pseudotsuga menziesii var. glauca
093	Engelmann spruce	Picea engelmannii
113	Limber pine	Pinus flexilis
122	Southwestern ponderosa pine	Pinus ponderosa var. scopulorum
114	Southwestern white pine	Pinus strobiformis
019	Subalpine fir	Abies lasiocarpa var. lasiocarpa
015	White fir	Abies concolor
290	Other softwoods	

Other Tree Species

Code	Common Species Name	Scientific Name
476	Curlleaf mountain mahogany	Cercocarpus ledifolius
063	Alligator juniper	Juniperus deppeana
730	Arizona sycamore	Platanus wrightii
061	Arizona cypress	Cupressus arizonica
803	Arizona white and Gray oak	Quercus arizonica
540	Ash	Quercus grisea
312	Bigtooth maple	Fraxinus sp.
		Acer saccharum var. grandidentatum
313	Boxelder	Acer negundo
810	Emory oak	Quercus emoryi
814	Gambel oak	Quercus gambelii
940	Hackberry	Celtis sp.
477	Hairy mountain mahogany	Cercocarpus montanus var. paucidentatus
763	Mesquite	Prosopis juliflora
829	Mexican blue oak	Quercus oblongifolia
134	Mexican pinyon pine	Pinus cembroides
757	New Mexico locust	Robinia neo-mexicana
068	One-seed juniper	Juniperus monosperma
106	Pinyon pine	Pinus edulis
066	Rocky mountain juniper	Juniperus scopulorum
840	Silverleaf oak	Quercus hypoleucoides
133	Singleleaf pinyon	Pinus monophylla
945	Tamarisk	Tamarix parviflora
065	Utah juniper	Juniperus osteosperma
600	Walnut	Juglans sp.
920	Willow	Salix sp.
990	Other hardwoods only	

Damage class codes are as follows. — Item 18

	Code	Damage
No serious damage	00	No serious damage
Insects	11	Bark Beetles
	12	Defoliators
Disease	21	Mistletoe, true
	22	Foliage and limb diseases
	23	Stem diseases (Aspen)
	24	Stem decays
	25	Butt and root diseases
Fire	31	Fire
Animal	41	Domestic animal
	42	Porcupine
	43	Wildlife browse (other than porcupine)
	44	Other wildlife damage (trampling, and so forth)
	45	Hare and rabbit
	46	Small rodent
Weather	51	Wind
	52	Lightning
	53	Snow
	54	Air pollution
	55	Chemical
	56	Flooding
	57	Drought
	58	Frost crack
	59	Sunscald
Suppression	61	Suppression
Unknown and Other	71	Leaning 15° from vertical
	72	Forked/multiple stem below merchantable top, seedlings/saplings with multiple stems
	73	Broken top
	74	Dead top
	75	Wolf tree
	76	Unhealthy foliage
	77	Excessive taper
	78	Forked/multiple stem above merchantable top
	79	Crook and sweep
Logging and Related Activity	81	Stem and bole damage
	82	Crown damage
	83	Root damage

Cause of Death. For mortality trees (Tree History = 05), determine cause of death and code as follows. — Item 18 — Tree History = 05

Code	Cause of Death
10	Insects
20	Disease
30	Fire
40	Animal
50	Weather
60	Suppression
70	Unknown and other
80	Logging and related activity

Record the most obvious cause of death, if more than one cause is evident.

Growth Trees

TREE	GROWTH: HEIGHT Item 10 Last 5 Full Years Terminal Growth	GROWTH: RADIAL Item 11 Last full 10 years DRC	GROWTH: RADIAL Item 11 Last full 10 years DBH	TREE AGE to last full year: DRH Item 12	TREE AGE to last full year: TOTAL Item 12
TIMBER SPECIES					
3.0" + DRH			X	X	
1.0" - 2.9" DBH		X			X
4" TALL - 0.9" DRH	X				X
	To nearest 1/10 Foot	to nearest 1/20 inch			
OTHER SPECIES					
3.0" + DRC		X			X
1.0" - 2.9" DCR		X			X
4" TALL - 0.9" DRC	X				X

An "X" indicates what information will be recorded for growth

Attachment D
Inventory Data for New Mexico WSB Sample
Intensive Inventory Sites

T.Daniel Samples

Plot#	T# (HC)	C	Sp	DBH (#)	HT Ft.	D	Dm	Tp	DC 2in	#/Acre	mm/ 10y	Age
TD 0101	01	04	202	17.5	67	1	11	1	18	11.5737		
TD 0101	02	01	202	5.6	36	1	12	2	6	116.933		
TD 0101	03	04	202	16.4		2	11	1	16	13.6341		
TD 0101	04	06	202	11.5		0	70	1	12	27.7280		
TD 0101	05	01	202	16.0		4	12	1	16	14.3243		
TD 0101	06	04	202	15.4		1	12	1	16	15.4622		
TD 0101	C	04	202	6		3	12			600.00		
TD 0101	A	01	746	24		6				2400.00		
TD 0101	A	01	015	4		6				400.00		
TD 0101	A	01	202	1		5	12			100.00		
TD 0101	C	01	015	1		2	12			100.00		
TD 0101	B	01	015	2		6				200.00		
TD 0101	B	01	202	2		2	12			200.00		
TD 0101	B	04	202	2		0				200.00		
TD 0101	A	04	202	1		0				100.00		
TD 0102	02	04	202	8.4	50	0	12	2	8	51.9704		
TD 0102	03	01	202	10.5		2	12	1	10	33.2610		
TD 0102	04	04	202	6.0		0	11	2	6	101.862		
TD 0102	05	04	202	21.0		0	11	1	22	8.31526		
TD 0102	B	01	015	2		5	12	3		200.00		
TD 0102	A	01	202	2		6				200.00		
TD 0102	A	01	015	3		6				300.00		
TD 0102	A	01	202	1		5	12			100.00		
TD 0102	A	01	113	1		6				100.00		
TD 0102	B	01	093	1		5	12			100.00		
TD 0102	A	01	015	1		5	12			100.00		
TD 0102	C	01	015	1		3	12			100.00		
TD 0103	02	04	202	16.1	60	0	11	1	16	14.1469		
TD 0103	03	01	202	11.4		4	12	1	12	28.2166		
TD 0103	04	01	202	11.8		1	12	1	12	26.3360		
TD 0103	05	04	202	15.3		0	11	1	16	15.6650		
TD 0103	A	01	202	2		6				200.00		
TD 0103	A	01	113	1		6				100.00		
TD 0103	B	01	015	2		5	12			200.00		
TD 0103	B	01	202	1		2	12			100.00		
TD 0103	A	01	015	1		5	12			100.00		
TD 0103	C	01	202	1		1	12			100.00		
TD 0103	C	04	202	1		0	12			100.00		
TD 0104	02	04	202	11.0	45	0	11	1	12	30.3060		
TD 0104	03	04	202	6.3		0	11	1	6	92.3918		
TD 0104	04	04	202	5.9		0	12	2	6	105.344		
TD 0104	05	04	202	10.2		0	11	1	10	35.2463		

```
TD 0104 06 01 202 10.0        2 12 1        10    36.6703
TD 0104  B 04 202    1        0 12                100.00
TD 0104  C 04 202    5        0 12                500.00
TD 0104  A 01 015    1        6                   100.00
-------------------------------------------------------------------------
TD 0105 02 01 202 13.8  50    2 12 1        14    19.2555
TD 0105 03 01 113  7.2        6  1           8    70.7375
TD 0105 04 01 202 10.0        1 12 1        10    36.6703
TD 0105  C 01 113    1        6                   100.00
TD 0105  A 01 113    1        6                   100.00
TD 0105  C 01 202    3        2 12                300.00
TD 0105  C 01 202    2        3 12                200.00
TD 0105  C 01 113    1        6                   100.00
TD 0105  C 01 015    1        4 12                100.00
-------------------------------------------------------------------------
-------------------------------------------------------------------------
TD 0201 02 04 202 15.8  69    0 11 1        16    14.6892
TD 0201 03 01 202 17.8        2 12 1        18    11.5737
TD 0201 04 01 202 11.1        1 12 1        12    29.7624
TD 0201 05 04 202 12.3        0 11 1        12    24.2384
TD 0201  A 01 Ju     1         6                  100.00
TD 0201  B 01 202    2        4 12                200.00
TD 0201  C 01 202    1        3 12                100.00
-------------------------------------------------------------------------
TD  0202 02 04 202 8.4        0 11 2         8    57.2973
TD 0202 03 01 202 15.2        2 12 1        16    15.8718
TD 0202 04 01 202 13.1        2 12 1        14    21.3684
TD 0202  A 01 015    3        6                   300.00
TD 0202  C 04 202    1        0 12                100.00
TD 0202  A 01 113    1        6                   100.00
TD 0202  B 04 202    1        0 12                100.00
TD 0202  B 01 Ju     1        6                   100.00
TD 0202  A 01 015    1        3 12                100.00
TD 0202  B 01 202    1        3 12                100.00
-------------------------------------------------------------------------
TD 0203 02 04 202  5.1        0 12 2         6    140.985
TD 0203 03 04 202  7.8        0 12 2         8    60.2733
TD 0203 04 04 202  6.4        0 12 2         6    89.5271
TD 0203 05 04 202  9.6        0 12 1        10    39.7898
TD 0203  A 01 015    4        6                   400.00
TD 0203  B 01 015    2        4 12                200.00
TD 0203  C 04 202    1        0 12                100.00
TD 0203  B 01 015    1        3 12                100.00
TD 0203  B 01 015    1        5 12                100.00
TD 0203  C 04 015    2        0 12                200.00
-------------------------------------------------------------------------
TD 0204 02 01 202  6.9  48    2 12           6     77.0223
TD 0204 03 04 746  5.9        0 70           6    105.344
TD 0204 04 01 202  5.6        1 12           6    116.933
TD 0204 05 04 202  6.0        0 12           6    101.862
TD 0204 06 04 202 10.3        0 12          10     34.5653
TD 0204 07 04 202  5.5        0 12           6    121.224
TD 0204  B 01 015    1        6                   100.00
TD 0204  A 01 015    8        6                   800.00
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TD 0204   C 04 202     3          0 12                    300.00
TD 0204   B 04 202     1          0 12                    100.00
TD 0204   A 01 746     3          6                       300.00
TD 0204   A 01 015     1          5 12                    100.00
TD 0204   B 01 746     2          6                       200.00
TD 0204   C 01 202     1          1 12                    100.00
-------------------------------------------------------------------------------
TD 0205 01 04 202 17.5           1 11 1          18       12.2524
TD 0205 02 01 202 14.6  57       1 12 1          14       17.2031     4   110
TD 0205 03 01 202  9.3           1 12 1          10       42.3983
TD 0205 04 04 202 10.1           0 11 1          10       35.9477
TD 0205 05 04 202  9.5           0 11 1          10       40.6319
TD 0205 06 01 202 11.5           2 12 1          12       27.7280
TD 0205 07 04 015  9.7           0 12 1          10       38.9736
TD 0205   A 01 015     5          6                       500.00
TD 0205   B 01 746     2          6                       200.00
TD 0205   A 04 202     1          0 12                    100.00
TD 0205   C 01 746     6          6                       600.00
TD 0205   A 01 202     2          3 12                    200.00
TD 0205   C 04 202     1          0 12                    100.00
TD 0205   B 04 202     1          0 12                    100.00
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
TD 0301 02 01 015  6.1           3 12 2           6        98.5496
TD 0301 03 01 202 12.9           3 12 1          12        22.0361
TD 0301   C 04 015     3          0 12                    300.00
TD 0301   B 01 015     1          2 12                    100.00
TD 0301   A 01 015     7          6                       700.00
TD 0301   B 04 015     1          0 12                    100.00
-------------------------------------------------------------------------------
TD 0302 02 04 202 17.3  73       1 11 1          18       12.2524     4   110
TD 0302 03 01 202 10.7           1 12 1          10       32.0292
TD 0302 04 01 202 16.8           2 12 1          16       12.9926
TD 0302 05 01 202 21.3           4 12 1          22        8.08268
TD 0302 06 04 202 15.1           1 11 1          16       16.0827
TD 0302   A 01 113     1          6                       100.00
TD 0302   A 01 015     4          6                       400.00
TD 0302   C 01 202     1          2 12                    100.00
TD 0302   A 01 746     2          6                       200.00
TD 0302   B 01 202     2          2 12                    200.00
TD 0302   A 01 015     1          3 12                    100.00
TD 0302   C 01 202     1          2 12                    100.00
TD 0302   B 01 015     1          6                       100.00
-------------------------------------------------------------------------------
TD 0303 02 04 202 13.2  55       1 11 2          14     21.0458
TD 0303 03 01 202  8.2           2 12 2           8     54.5364
TD 0303 04 01 202  5.7           2 12 2           6    112.866
TD 0303 05 01 202 16.0           5 12 1          16     14.3243
TD 0303   A 01 015     1          6                       100.00
TD 0303   C 01 113     1          6                       100.00
TD 0303   C 01 202     3          3 12                    300.00
TD 0303   A 01 202     2          2 12                    200.00
TD 0303   B 01 202     1          3 12                    100.00
-------------------------------------------------------------------------------
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TD 0304 02 01 202 16.1  58     3 12 1          16     14.1469     4  100
TD 0304 03 01 113 10.3         3 70 1          10     34.5653
TD 0304 04 01 113 13.1         6  1            14     21.3684
TD 0304 05 01 015 16.0         1 12 1          16     14.3243
TD 0304  A 01 015    2         6                     200.00
TD 0304  A 01 202    3         5 12                  300.00
-------------------------------------------------------------------------
-------------------------------------------------------------------------
TD 0401 02 01 202 10.0  48     4 12            10     36.6703     6  110
TD 0401 03 01 202 17.0         5 12            18     12.6886
TD 0401 04 01 015  8.4         2 12             8     51.9704
TD 0401 05 01 093 13.8         2 12            14     19.2555
TD 0401  A 01 015    3         6                     300.00
TD 0401  A 01 202    3         6                     300.00
TD 0401  A 01 015    3         4 12                  300.00
TD 0401  B 01 746    1         6                     100.00
TD 0401  A 01 015    3         4 12                  300.00
TD 0401  C 04 202    5         4 12                  500.00
TD 0401  A 01 202    1         3 12                  100.00
-------------------------------------------------------------------------
TD 0402 02 04 202 24.8  80     0 12            24      5.96226
TD 0402 03 04 015  5.7         0 12             6    112.866
TD 0402 04 04 202  9.3         0 12            10     42.3983
TD 0402 05 04 202  8.4         0 12             8     51.9704
TD 0402 06 01 202  9.5         4 12            10     40.6319
TD 0402 07 04 202 11.5         0 12            12     27.7280
TD 0402 08 04 202 21.4         0 11            22      8.00732
TD 0402 09 04 202  6.6         0 12             6     84.1835
TD 0402  C 04 202    3         0 12                  300.00
TD 0402  C 01 015    1         2 12                  100.00
-------------------------------------------------------------------------
TD 0403 02 01 202 13.8  60     3 12            14     19.2555     6  112
TD 0403 03 01 202 18.0         0 12            18     11.3180
TD 0403 04 04 015  7.7         0 12             8     61.8491
TD 0403 05 01 015 10.8         4 12            10     31.4388
TD 0403 06 01 202  7.5         1 12             8     65.1917
TD 0403 07 04 015  7.9         0 12             8     58.7571
TD 0403  C 04 015    2         0                     200.00
-------------------------------------------------------------------------
TD 0404 02 01 015  5.6  25     2 12 2           6    116.933
TD 0404 03 01 015  7.4         4 12 1           8     66.9655
TD 0404 04 01 015  9.8         5 12 1          10     38.1823
TD 0404 05 04 015  7.4         0 12 2           8     66.9655
TD 0404  A 01 015    5         6                     500.00
TD 0404  C 04 202    7         0 12                  700.00
-------------------------------------------------------------------------
TD 0405 02 04 202  7.7         0 12             8     61.8491
TD 0405 03 04 202 19.3         1 11            20      9.84464
TD 0405 04 04 202 13.0         0 11            14     21.6984
TD 0405 05 01 202 14.6         1 12            14     17.2031
TD 0405 06 04 202 11.0         1 11            12     30.3060
TD 0405 07 04 202 17.3         0 11            18     12.2524
TD 0405 08 04 202 11.8         0 11            12     26.3360
TD 0405  B 04 202    1         0 12                  100.00
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TD 0405  C 04 202    5          0 12                    500.00
TD 0405  A 01 015    1          6                       100.00
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
TD 0501 01 01 202 10.3  66     2 12 1          12     27.73
TD 0501 02 04 202  9.3  55     1 11 1          10     33.26
TD 0501 03 04 015 10.5         0 12 1          12     27.73
TD 0501 04 01 202 12.0         2 12 1          12     27.73
TD 0501 05 01 015  9.8         3 12 1          10     33.26
TD 0501  C 04 202    5         0 12                   500.00
TD 0501  A 01 015    1         6                      100.00
-------------------------------------------------------------------------------
TD 0502 01 01 015  6.3  27     3 12 1           8     51.97

TD 0502 02 01 015  8.6  26     3 12 1          10     33.26
TD 0502 03 01 015  6.8         3 12 1           8     51.97
TD 0502 04 01 015  8.8         4 12 1          10     33.26
TD 0502 05 01 015 10.2         4 12 1          12     27.73
TD 0502 06 01 015  9.7         5 12 1          10     33.26
TD 0502  C 04 015    1         0 12                   100.00
TD 0502  B 01 202    1         3 12                   100.00
-------------------------------------------------------------------------------
TD 0503 01 04 202  9.7  53     0 11            10     33.26
TD 0503 02 01 015 12.6  52     5 12            14     19.26      9  124
TD 0503 03 04 202  7.7         0 11             8     51.97
TD 0503 04 04 202  6.9         0 11             8           51.97
TD 0503 05 04 202 10.2         1 11            12           27.73
TD 0503  B 01 202    2         5 12                   200.00
TD 0503  C 01 015    1         5 12                   100.00
TD 0503  A 01 202    3         6                      300.00
-------------------------------------------------------------------------------
TD 0504 01 04 202 12.9  60     0 11 1          14           19.26
TD 0504 02 01 202 10.4  58     2 12 1          12     27.73              5   80
TD 0504 03 01  JU  5.6         6 -- 2           6    116.93
TD 0504 04 01 202  9.8         1  1            10     33.26
TD 0504 05 04 202 11.8         0 11 1          12           27.73
TD 0504 06 04 202  9.6         0 11 1          10           33.26
TD 0504  B 01 015    1         6                      100.00
TD 0504  B 01  JU    2         6                            200.00
TD 0504  C 04 202    2         0 12                   200.00
TD 0504  A 01 015    1         6                      100.00
TD 0504  C 01  JU    1         6                      100.00
-------------------------------------------------------------------------------
TD 0505 01 01 015 12.6  55     3 12 1          14     19.26              5  113
TD 0505 02 01 202  6.9         2 12 2           8       51.97
TD 0505 03 01 202  5.6         3 12 2           6         116.93
TD 0505 04 01 015  9.6         2 12 1          10     33.26
TD 0505  C 01  JU    1         6 --                   100.00
TD 0505  A 01 015    3         6 --                   300.00
TD 0505  B 01 202    3         4 12                   300.00
TD 0505  A 01 202    5         6 --                   500.00
TD 0505  C 01 202    2         2 12                   200.00
TD 0505  A 01 202    1         2                      100.00
TD 0505  C 01 202    1         1 12                   100.00
TD 0505  B 01  JU    1         6                      100.00
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TD 0505  C 04 202     1          0 12                          100.00
-------------------------------------------------------------------------
-------------------------------------------------------------------------
TD 0601 01 04 202  6.6  40     0 12 2          8          51.97
TD 0601 02 01 202 10.8  52     1 12 1         12          27.73
TD 0601 03 01 015 10.2         4 12 1         12       27.73
TD 0601 04 01 202 11.3         2 12 1         12          27.73
TD 0601 05 04 015  6.5         0 12 2          8       51.97
TD 0601  C 01 015     1        2 12                   100.00
TD 0601  A 01 015     1        3 12                   100.00
TD 0601  A 01 015     8        6                      800.00
TD 0601  B 01 015     1        6                      100.00
TD 0601  A 01 202     3        6                      300.00
TD 0601  C 04 202     1        0 12                   100.00
-------------------------------------------------------------------------
TD 0601 01 01 202 12.7  60     0 11 1         14          19.26
TD 0602 02 04 202  7.1  42     0 11 2          8          51.97
TD 0602 03 04 202 14.6         0 11 1         16          15.46
TD 0602 04 04 202  8.0         0 11 1          8          51.97
TD 0602 05 01 202  8.9         1 12 1         10          33.26
TD 0602 06 04 202  6.8         0 11 1          8          51.97
TD 0602 07 04 202  6.1         0 11            8          51.97
TD 0602  C 04 202     1        0 12                   100.00
-------------------------------------------------------------------------
TD 0603 01 01 202  7.9  53     1 12 1          8          51.97
TD 0603 02 01 015 10.4         2 12 1         12          27.73
TD 0603 03 04 202 13.3         0 11 1                     14     19.26
TD 0603 04 04 202  5.9         0 12 2                      6    116.93
TD 0603 05 01 202  9.4         1 12 1                     10     33.26
TD 0603 06 04 202 16.3         0 11 1                     18     11.57
TD 0603  C 01 202     1        1 12                   100.00
TD 0603  C 04 015     1        0 12                   100.00
TD 0603  C 04 202     1        0 12                   100.00
-------------------------------------------------------------------------
TD 0604 01 04 202  9.9  51     0 12 1         10          33.26
TD 0604 02 04 202  5.3         0 11 2                      6    116.93
TD 0604 03 04 202 10.2         0 11 1                     12     27.73
TD 0604  A 01 015    10        6                      1000.00
TD 0604  B 01 015     1        6                      100.00
TD 0604  A 01 113     1        6                      100.00
TD 0604  C 04 202     2        0 12                   200.00
TD 0604  B 04 202     2                               200.00
TD 0604  C 04 015     2                               200.00
-------------------------------------------------------------------------
TD 0605 01 04 202 13.0         0 11 1         14          19.26
TD 0605 02 01 202 19.1         3 12 1                     20      9.8
TD 0605 04 04 202 10.5  58     0 11 1                     12     27.73
TD 0605 05 04 202  5.1  67     0 12 2                  6  116.93
TD 0605 06 04 202  9.1         0 11 1                     10     33.26
TD 0605  C 01 ASP     9        6                      600.00
TD 0605  A 01 015     5        6                      500.00
TD 0605  B 01 015     2                               200.00
TD 0605  C 04 202     2                               200.00
TD 0605  C 04 ASP     1                               100.00
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TD 0605  B 01 ASP     6                                                  600.00
-------------------------------------------------------------------------------
TD 0701 01 04 202 11.5  48     0 11 1     12          27.73
TD 0701 02 01 202 10.1  57     2 12 1                 12     27.73       2  147
TD 0701 03 01 202 11.3         3 12 1                 12     27.73
TD 0701  A 01 202      5       6                   500.00
TD 0701  B 01 015      3       6                   300.00
TD 0701  B 01 202      3       6                   300.00
TD 0701  C 01 015      2       5 12                200.00
TD 0701  C 01 202      1       5 12                100.00
-------------------------------------------------------------------------------
TD 0702 01 01 202  8.4  59     3 12 1     10          33.26                3  134
TD 0702 02 01 202 11.1         3 12 1                 12     27.73
TD 0702 03 01 202 10.7         4 12 1     12          27.73
TD 0702  C 04 202      4       0 12                400.00
TD 0702  C 01 746      4       6                   400.00
TD 0702  C  06 756     2       0 70                200.00
TD 0702  C 06 202      5       0  70               500.00
TD 0702  A 01 202      3       6                   300.00
TD 0702  B 01 746     10       6                1000.00
TD 0702  C 01 202      6       1 12                600.00
-------------------------------------------------------------------------------
TD 0703 01 01 015 15.2         2 12 1     16          15.46
TD 0703 02 01 202 15.9  68     5 12 1     16          15.46                6  192
TD 0703 03 01 202 16.1         2 12 1                 18     11.57
TD 0703 04 01 015 15.3         4 12 1                 16     15.46
TD 0703 05 01 015 11.6         2 12 1                 12     27.73
TD 0703 06 01 015 12.6         4 12                   14     19.26
TD 0703 07 04 202 11.3         0 11                   12     27.73
TD 0703  C 01 202      2       5 12                200.00
TD 0703  C 06 202      3       0 70                300.00
TD 0703  A 01 202      3       6                   300.00
TD 0703  C 01 202      1       3 12                   100.00
TD 0703  B 01 015      2       5 12                200.00
TD 0703  B 01 202      8       5 12                800.00
TD 0703  C 01 202      1       2 12                100.00
TD 0703  B 01 015      1       3 12                100.00
TD 0703  C 01 015      1       3 12                100.00
TD 0703  A 01 015      3       6                   300.00
-------------------------------------------------------------------------------
TD 0704 01 01 015 15.3  45     4 12 1     16          15.46
TD 0704 02 01 015 12.4  48     5 12 1     14          19.26               17  112

TD 0704 03 04 202 14.3         0 11 1     16          15.46
TD 0704 04 04 202 11.3         1 11 1         12      27.73
TD 0704 05 04 202 15.8         1 11 1         16      15.46
TD 0704 06 01 015 16.9         3 12 1         18      11.57
TD 0704 07 01 015  9.5         5 12 2         10      33.26
TD 0704 08 01 015 21.6         5 12 1         22       8.31
TD 0704 09 01 202 12.8         2 12 1         14      19.26
TD 0704  A 01 015      4       6                   400.00
TD 0704  A 01 202      1       6                   100.00
TD 0704  B 01 746      1       6                   100.00
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TD 0705 01 01 015  7.3  44      3 12 1      8                51.97              7  101
TD 0705 02 04 015  5.4          0 12 2             6        125.755
TD 0705 03 01 202 20.7          4 12 1            22          8.56
TD 0705 04 01 202 23.7          4 12 1            24          6.52857
TD 0705  A 01 113    1          6                            100.00
TD 0705  A 01 202    7          6                            700.00
TD 0705  C 04 015    7          0 12                         700.00
TD 0705  A 01 015    1                                       100.00
-------------------------------------------------------------------------------
TD 0801 01 01 202  8.7  51      3 12 1     10                33.26              6   74
TD 0801 02 01 202  7.1          2 12 1              8        72.7441
TD 0801 03 01 113 13.1          6    1             14        21.3684
TD 0801 04 01 202  7.3          1 12 1              8        68.6127
TD 0801 05 01 202 12.4          3 12 1             12        23.8490
TD 0801  C 01 202    2          2 12                         200.00
TD 0801  C 01 202    4          1 12                         400.00
TD 0801  A 01 202    2          1 12                         200.00
-------------------------------------------------------------------------------
TD 0802 01 01 202 17.5  69      5 12 1     18                11.57              5  113
TD 0802 02 06 202  6.2          0 70 2              6        95.3962
TD 0802 03 01 202  7.9          4 12 2              8        58.7571
TD 0802 04 01 202  9.6          5 12 1             10        39.7898
TD 0802  C 01 069    3          6                            300.00
TD 0802  B 01 202    4          1 12                         400.00
TD 0802  C 01 202    1          2 12                         100.00
TD 0802  A 04 202    1          1 12                         100.00
TD 0802  C 06 746    2          0 70                         200.00
TD 0802  B 01 202    1          4 12                         100.00
TD 0802  A 01 202    4          2 12                         400.00
TD 0802  C 01 202    1          1 12                         100.00
-------------------------------------------------------------------------------
TD 0803 01 01 202 10.0          2 12 1     10                33.26
TD 0803 02 01 202  9.1  50      6                           10     44.2824     6   70
TD 0803 03 01 202 22.5          5 12 1             22          7.24352
TD 0803 04 01 202  5.0          2 12 2              6        146.681
TD 0803 05 01 202  7.9          2 12 2              8         58.7571
TD 0803  C 01 202    2          1 12                         200.00
TD 0803  A 04 202    1          0 12                         100.00
TD 0803  C 04 202    1          0 12                         100.00
TD 0803  A 01 202    1          6                            100.00
-------------------------------------------------------------------------------
0804 01 01 202 20.1             5 12 1     22                                    TD
TD 0804 02 01 202 19.9          5 12 1                8.31              5  137
TD 0804 03 01 202  7.4          2 12 2             20          9.25995
TD 0804 04 01 202  6.6          2 12 2              8        66.9655
TD 0804 05 01 202 18.8          4 12 1              6        84.1835
TD 0804  C 04 202    6          0 12               18        10.3752
TD 0804  C 01  202   5          1 12                         600.00
TD 0804  C 01 746    1          6                            500.00
TD 0804  B 04 202    2          0 12                         100.00
TD 0804  B 01 746    4          6                            200.00
TD 0804  B 01 202    1          2 12                         400.00
TD 0804  A 01 746    1          6                            100.00
                                                             100.00
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TD 0804  C 01 069    1          6                          100.00
-------------------------------------------------------------------------------
TD 0805 01 01 746  6.2  51     6     2     8          51.97
TD 0805 02 01 202  9.1  57     2 12  1    10     44.2824                    6   68
TD 0805 03 04 202 14.0         0 11  1          14     18.7093
TD 0805 04 01 202  7.5         1 12  1           8     65.1917
TD 0805 05 01 015  7.1         3 12  1           8     72.7441
TD 0805 06 01 202  6.8         2 12  1           6     79.3043
TD 0805  A 01 202   10          2 12                   1000.00
TD 0805  A 04 202    1          0 12                    100.00
TD 0805  B 01 015   19          2 12                   1900.00
TD 0805  B 01 015    4          4 12                    400.00
TD 0805  B 01 746    7          6                       700.00
TD 0805  A 01 113    1          6                       100.00
TD 0805  C 01 202    1          1 12                    100.00
TD 0805  B 04 202    3          0 12                    300.00
TD 0805  B 01 113    1          6                       100.00
TD 0805  A 01 015   11          6              1100.00
TD 0805  B 01 202    1          1 12                    100.00
TD 0805  A 01 015    7          2 12                    700.00
TD 0805  C 04 202    2          0 12                    200.00
-------------------------------------------------------------------------------
TD 0806 01 01 202 18.5  71     5 12  1    20          9.8                    6  125
TD 0806 02 04 202 16.5         4 11  1          16     13.4693
TD 0806 03 04 202 13.3         1 11  1          14     20.7305
TD 0806 04 04 202 15.2         1 11  1          16     15.8718
TD 0806 05 04 202  15.2        1 11  1          16     16.2979
TD 0806  B 01 015    5          5 12                    500.00
TD 0806  B 01 746    2          6                       200.00
TD 0806  A 01 015    2          4 12                    200.00
TD 0806  A 01 015    3          6                       300.00
TD 0806  B 01 015    1          6                       100.00
TD 0806  C 01 202    1          1 12                    100.00
TD 0806  B 01 202    1          1 12                    100.00
TD 0806  B 01 113    1          6                       100.00
TD 0806  B 01 069    1          6                      .100.00
-------------------------------------------------------------------------------
TD 0807 01 01 015 16.8  52     4 12  1    18         11.57                   6  123
TD 0807 02 04 202  7.8  39     0 11  1           8     60.2733
TD 0807 03 04 202  5.0         0 12  2           6    146.681
TD 0807 04 01 202  7.3         1 12  1           8     68.8127
TD 0807 05 01 202  7.8         2 12  1           8     60.2733
TD 0807 06 01 113 11.1         6     1          12     29.7624
TD 0807 07 01 202  6.0         1 12  1           6    101.862
TD 0807  C 04 202    4          0 12                    400.00
TD 0807  C 01 202    2          1 12                    200.00
TD 0807  A 01 202    1          4 70                    100.00
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------TD
0901 01 01 202 11.1  42  3 12  1     12    27.73     6     78
TD 0901 02 04 202 11.7         1 11  1          12     26.7881
TD 0901 03 01 202  7.6         2 12  1           8     63.4874
TD 0901 04 01 202  7.1         1 12  1           8     72.7441
TD 0901 05 01 202  9.4         3 12  1          10     41.5010
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TD 0901   C 04 202     3          0 12                          300.00
TD 0901   A 01 069     1          6                             100.00
TD 0901   B 01 069     1          6                             100.00
-------------------------------------------------------------------------
TD 0902 01 01 202 11.7  48      5 12 1     12                    27.73
TD 0902 02 01 202  8.7          1 12 1           8               48.4480
TD 0902 03 01 202 15.2          1 12 1          16               15.8718
TD 0902   B 04 202     1          0 12                          100.00
TD 0902   C 01 015     2          4 12                          200.00
TD 0902   B 01 015     1          2 12                          100.00
TD 0902   A 01 015     1          2 12                          100.00
TD 0902   C 04 202     5          0 12                          500.00
TD 0902   C 01 202     1          1 12                          100.00
TD 0902   A 04 202     1          0 12                          100.00
-------------------------------------------------------------------------
TD 0903 01 01 202 16.4  62      4 12 1     18                    10.83          5  120
TD 0903 02 01 202 18.4          5 12 1           18              10.8312
TD 0903 03 04 202 10.2          0 11 1           10              35.2463
TD 0903 04 01 202 17.0          3 12 1           18              12.6886
TD 0903 05 01 202 12.6          5 12 1           12              23.0979
TD 0903   C 04 202     1          0 12                          100.00
TD 0903   B 01 202     1          1 12                          100.00
TD 0903   C 01 015     2          3 12                          200.00
TD 0903   A 01 015     6          5 12                          600.00
TD 0903   C 01 202     2          2 12                          200.00
TD 0903   C 04 202     1          0 12                          100.00
TD 0903   B 01 015     1          3 12                          100.00
TD 0903   C 01 015     1          1 12                          100.00
TD 0903   A 01 202     1          2 12                          100.00
-------------------------------------------------------------------------
TD 0904 01 01 202 13.8  55      5 12 1     14                    19.26          5  110
TD 0904 02 01 746  5.0          6     2          6               146.681
TD 0904 03 01 202 14.4          4 12 1          14               17.6843
TD 0904 04 01 202 15.6          5 12 1          16               15.0683
TD 0904 05 01 202  6.1          2 12 2           6               98.5496
TD 0904   A 01 015     6          4 12                          600.00
TD 0904   C 01 746     3          6                             300.00
TD 0904   B 01 015     1          1 12                          100.00
TD 0904   B 04 015     1          0 12                          100.00
TD 0904   A 01 202     5          4 12                          500.00
TD 0904   C 01 015     1          3 12                          100.00
TD 0904   B 01 202     1          3 12                          100.00
TD 0904   C 01 015     1          4 12                          100.00
TD 0904   C 06 746     1          0 70                          100.00
TD 0904   A 01 746     1          6                             100.00
TD 0904   A 01 202     1          1 12                          100.00
TD 0904   C 04 202     1          0 12                          100.00
-------------------------------------------------------------------------
TD 0905 01 01 202 12.1  54      3 12 1     14                    19.26          10  73
TD 0905 02 04 202 16.8          1 11 1          16               12.9926
TD 0905 03 01 202 15.3          2 12 1          16               15.6650
TD 0905 04 01 202  8.3          2 12 1           8               53.2302
TD 0905   B 01 202     4          2 12                          400.00
TD 0905   C 04 015     1          0 12                          100.00
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TD 0905	A	01	202	1		6					100.00			
TD 0905	A	01	015	5		5	12				500.00			
TD 0905	B	01	015	1		4	12				100.00			
TD 0905	B	01	202	1		4	12				100.00			
TD 0905	C	01	015	1		4	12				100.00			
TD 0905	B	01	015	1		5	12				100.00			
TD 0905	A	01	015	1		6					100.00			
TD 0906	01	01	202	9.1	52	4	12	1	10		33.26		9	84
TD 0906	02	06	746	6.4		0	70	2		6	89.5271			
TD 0906	03	06	746	7.4		0	70	2		8	66.9655			
TD 0906	04	04	202	18.9		1	11	1		18	10.2657			
TD 0906	05	04	202	14.5		1	11	1		14	17.4413			
TD 0906	C	06	746	4		0	70				400.00			
TD 0906	C	04	202	1		0	12				100.00			
TD 0906	A	01	202	1		2	12				100.00			
TD 0906	A	01	015	1		6					100.00			
TD 0906	B	01	015	1		3	12				100.00			
TD 0906	C	01	202	2		2	12				200.00			
TD 0906	A	01	113	1		6					100.00			

Table Legend: Plot # = Sample site number; Tree # (HC) = Tree number (or height class, A = 0 - 2ft, B = 2ft - 4ft, C = 4ft+); Sp = Species (015 = white fir, 018 = corkbark fir, 019 = subalpine fir, 093 = engelman spruce, 096 = blue spruce, 113 = limber pine, 114 = white pine, 122 = ponderosa pine, 202 = douglas fir, 290 = other softwoods, 746 = aspen); DBH (#) = diameter at breast height in inches (or number of stems tallied); HT,Ft = height in feet; D = defoliation class (0 = no visible foliage, 1 = 0 to 10% foliage, 2 = 10 to 20%, 3 = 20 to 40%, 4 = 40 to 70%, 5 = 70 to 99%, 6 = 100% or no visible defoliation); Dm = damage class (11 = bark beetles, 12 = defoliators/WSB, 70 = other or unknown); Tp = tree position (1 = first/top story, 2 = second story, 3 = third/lowest story); #Acre = number of stems per acre; mm/10y = mm growth in last 10 years; Age = tree age in years.

ATTACHMENT D: VEGETATIVE GROUND COVER
Data for each Sample Point in each Stand/Plot

Sample #/ Site #	Slp/ Asp	%C	% Cover in: Gr	Frb	Shb	Height (in.) Gr	Frb	Shb
S010 1	71NE	10	1	-	9	4	-	8
S010 2	61NE	45	-	1	45	-	11	72
S010 3		15	1	7	7	7	3	8
S010 4	55NE	3	1	1	1	6	1	2
S020 1	46 N	45	6	16	20	17	7	12
S020 2	58 N	30	5	12	10	16	8	6
S020 3	56 N	44	-	6	36	-	8	13
S020 4	69 N	30	2	23	4	4	6	9
S020 5	68 N	22	-	20	1	-	11	2
S030 1	54 N	16	9	8	-	24	11	-
S030 2	51 N	23	-	12	9	-	5	7
S030 3	N	10	-	3	8	-	4	14
S030 4	40 N	28	2	25	-	5	11	-
S030 5	N	25	-	20	5	-	11	7
S040 1	61 N	40	3	27	9	22	9	3
S040 2		45	6	35	5	16	25	5
S040 3	60NW	5	3	2	-	13	4	-
S040 4	67 N							
S090 1	12 N	92	-	85	6	-	12	6
S090 2	11 N	80	-	75	4	-	13	4
S090 3	34 N	23	-	18	3	-	6	8
S090 4	22 N	30	1	25	2	11	8	2
S090 5	24 N	60	2	55	4	10	12	9
S100 1	20 E	60	2	50	6	11	7	8
S100 2	15 E	10	2	4	4	7	13	4
S100 3	20 E	20	-	18	2	-	6	2
S100 4	21 E	10	3	2	5	9	4	7
S100 5	18 E	30	1	7	20	6	10	16
S110 1	70SE	40	2	4	35	10	7	20
S110 2	71SE	2	-	-	2	-	-	14
S110 3	78SE	90	-	-	90	-	-	72
S110 4	65SE	2	-	-	2	-	-	4
S110 5	S	15	-	8	5	-	14	15
D010 1	17 N	80	17	40	23	11	8	19
D010 2	45NE	50	5	30	17	16	7	15
D010 3	49NE	95	30	3	57	23	2	21
D010 4	68NE	28	5	18	11	7	13	15
D010 5	62NW	10	0	2	8	0	1	18
D020 1	64 N	75	7	45	21	14	11	5
D020 2	54NE	47	18	10	15	12	13	6
D020 3	66HNE		48	12	33	5	17	22
D020 4	66NE	35	3	4	26	10	7	24
D020 5	59NE	70	10	5	53	13	6	38
D030 1	74 W	50	7	37	8	14	7	6
D030 2	72 W	30	0	3	25	0	2	24
D030 3	68 W	0						
D030 4	67 W	10	0	0	10	0	0	12

ATTACHMENT E:NEW MEXICO WSB STUDY

Scenic Beauty Estimates and other Scaling Data for each Assessed Scene

STIMULUS	MEAN RAW RATING	STD. DEV. OF RAW RATINGS	BASELINE ADJ MEAN RATING	TRANSFORMS BASED ON OBSERVERS' RESPONSES TO 1) ALL INCLUDED STIMULI SBE	Z	LEAST SQUARES	2) BASELINE STIMULI Z	LEAST SQUARES	SKEWNESS RAW RATING	SKEWNESS BL-ADJ RATING	SKEWNESS Z-TRAN RATING	KURTOSIS RAW RATING
D A 1 1	7.34	2.15	1.28	54.57	.56	6.27	.58	6.32	-.632	-.238	-.560	-.412
D A 1 3	6.33	1.89	.51	26.93	.25	5.97	.26	5.96	-.206	-.331	-.549	-.749
D A 1 4	6.64	2.13	.82	39.72	.41	6.06	.44	6.00	-.240	-.306	-.392	-.773
D A 2 1	5.52	1.65	-.30	-14.97	-.09	5.69	-.13	5.78	-.019	.104	.033	-.312
D A 2 2	7.28	1.56	1.46	68.44	.75	6.21	.82	6.11	-.779	-.004	-.393	.211
D A 2 3	7.59	2.22	1.52	55.13	.69	6.33	.70	6.38	-1.281	-1.212	-1.244	1.424
D A 2 4	7.12	1.87	1.06	57.65	.51	6.23	.52	6.28	-.190	-.046	-.036	-.943
D A 3 1	6.18	2.01	.12	5.78	.05	6.08	.00	6.10	-.294	-.157	-.213	-.524
D A 3 2	5.77	2.85	-.29	-8.28	-.14	6.02	-.18	5.99	.054	.046	-.012	-1.498
D A 3 3	5.37	2.04	-.45	-22.35	-.13	5.61	-.23	5.72	-.037	-.165	.188	-.656
D A 3 4	7.21	1.93	1.39	65.81	.68	6.21	.73	6.10	-.526	-.014	-.241	-.671
D A 4 1	6.46	1.92	.35	19.34	.29	5.99	.18	6.16	-.155	-.193	-.282	-.480
D A 4 2	5.49	2.02	-.33	-7.73	-.15	5.67	-.25	5.76	.272	.559	.295	-.740
D A 4 3	5.51	1.89	-.56	-18.19	-.21	5.92	-.23	5.94	.290	.425	.898	-.704
D A 4 4	7.38	1.75	1.32	64.67	.63	6.28	.65	6.36	-.537	-.097	-.224	-.358
D A 5 2	5.80	2.42	-.26	-8.36	-.13	6.02	-.16	6.02	-.004	-.119	-.062	-1.071
D A 5 3	6.15	2.08	.33	20.98	.14	5.85	.08	5.87	-.016	.344	.042	-1.042
D A 5 4	6.34	1.89	.52	31.71	.27	5.94	.25	5.93	.027	-.077	-.009	-.545
D BR 2 3	5.93	2.06	.10	4.65	.11	5.81	.09	5.85	-.218	.232	-.091	-.915
D BR 1 1	6.86	2.22	.80	34.32	.34	6.18	.32	6.19	-.477	-.242	-.409	-.643
D BR 1 3	5.66	2.08	-.16	-8.22	.00	5.72	-.06	5.77	-.124	-.119	-.001	-.783
D BR 1 4	7.10	1.88	1.28	61.09	.67	6.18	.73	6.07	-.537	-.541	-.391	.293
D BR 2 1	4.88	2.32	-1.19	-60.33	-.51	5.79	-.56	5.80	-.150	.031	.287	-1.206
D BR 2 4	6.60	2.57	.78	30.61	.46	6.04	.50	5.99	-.400	-.565	-.548	-1.054
D BR 3 1	5.39	2.07	-.43	-11.22	-.21	5.62	-.27	5.72	.324	.369	.191	-.731
D BR 3 2	7.10	2.12	1.28	54.25	.74	6.19	.81	6.07	-.681	-.583	-.298	-.065
D BR 4 2	6.58	1.97	.52	18.83	.29	6.13	.29	6.17	-.548	-.589	-.274	-.494
D BR 4 3	6.72	2.28	.89	43.36	.49	6.04	.52	5.98	-.179	-.395	-.367	-1.056
D BR 4 4	8.08	2.10	1.87	71.94	1.44	6.58	1.14	6.81	-1.215	-1.072	-.991	.875
D BR 5 1	4.84	2.14	-.99	-53.69	-.44	5.39	-.57	5.58	-.046	.440	.622	-1.232
D BR 5 2	6.00	2.16	.18	11.56	.15	5.83	.13	5.87	-.009	-.261	-.025	-.494
D BR 5 4	6.32	2.23	.26	12.86	.15	6.07	.14	6.14	-.252	.057	.209	-.864
D F 1 1	5.44	1.66	-.77	-33.95	-.21	5.63	-.50	5.99	-.161	-.500	.072	-.970
D F 1 2	6.84	2.12	.63	19.02	.64	6.12	.36	6.45	-.889	-.985	-1.007	.296
D F 1 3	5.36	1.75	-.85	-37.00	-.23	5.62	-.48	5.98	-.088	.239	.222	-1.220
D F 1 4	7.44	1.94	1.23	53.05	.94	6.21	.66	6.51	-.374	.214	-.202	-1.296
D F 2 1	5.77	2.07	-.34	-19.38	-.08	5.80	-.25	6.02	-.252	.196	.055	-.604
D F 2 2	6.20	1.55	-.01	2.13	.29	5.93	.01	6.26	.000	.095	-.279	-1.130
D F 2 3	6.36	1.70	.15	6.02	.39	5.94	.11	6.22	-.303	-.402	-.375	-.669
D F 2 4	5.29	1.93	-.83	-31.88	-.27	5.70	-.43	5.93	.341	.462	.537	-.352
D F 3 1	3.92	1.63	-2.29	-102.48	-1.04	5.21	-1.32	5.61	.068	-1.039	-.062	-.943
D F 3 2	5.20	1.94	-1.01	-37.80	-.29	5.58	-.55	5.95	.522	1.477	1.124	-.424
D F 3 3	5.68	1.97	-.53	-17.50	-.12	5.68	-.39	6.04	.336	.557	.637	-.496
D F 3 4	5.07	2.09	-1.04	-45.96	-.36	5.70	-.51	5.93	.224	-.034	.183	-1.066
D F 4 1	5.83	1.86	-.28	-9.10	-.04	5.82	-.18	6.01	.035	.008	-.161	-.738
D F 4 2	5.72	1.77	-.49	-20.26	-.01	5.74	-.27	6.08	-.025	-.564	.011	-.882
D F 4 3	5.80	1.83	-.41	-16.32	.03	5.77	-.25	6.09	.087	-.268	-.022	-.450

D F 4 4	5.40	1.94	-.81	-37.04	-.15	5.69	-.46	6.06	-.086	-.335	-.106	-1.271
D F 5 1	4.76	2.17	-1.45	-64.51	-.55	5.50	-.78	5.84	.013	.050	.979	-.981
D F 5 2	6.09	1.77	-.03	1.88	.12	5.92	-.02	6.13	-.081	-.126	-.105	-.485
D F 5 3	5.36	1.80	-.85	-22.44	-.30	5.56	-.59	5.91	1.042	1.016	.646	.084
D F 5 4	5.23	2.07	-.88	-34.93	-.30	5.70	-.42	5.91	.310	.251	.342	-.517
D FAL 1 1	6.57	1.85	.51	30.91	.27	6.14	.26	6.18	-.079	-.424	-.295	-.857
D FAL 2 1	4.89	2.47	-1.17	-52.27	-.56	5.83	-.59	5.81	.195	.340	.151	-1.276
D FAL 2 2	5.85	1.92	-.22	-8.56	-.10	5.99	-.15	5.98	-.084	-.324	-.036	-.890
D FAL 3 1	6.92	2.03	.86	42.00	.42	6.20	.41	6.25	-.369	-.204	-.142	-.547
D FAL 3 2	5.08	1.99	-.99	-38.16	-.46	5.86	-.52	5.87	.354	.227	-.052	-.740
D FAL 4 1	5.95	2.35	-.11	-5.20	-.04	6.02	-.04	6.01	-.073	.035	-.147	-1.293
D FAL 5 1	5.42	2.52	-.65	-22.16	-.25	5.92	-.28	5.96	.167	.163	.267	-1.147
D FAL 5 2	6.58	2.01	.52	22.45	.23	6.15	.22	6.17	-.493	.042	-.156	-.370
D GEL 1 1	6.44	2.47	.23	3.31	.47	6.00	.23	6.29	-.618	-.458	-.387	-.614
D GEL 1 2	5.88	1.59	-.33	-5.51	.05	5.79	-.24	6.16	.547	.834	.275	-.982
D GEL 1 3	5.60	1.53	-.61	-24.28	-.09	5.69	-.38	6.06	-.013	-.005	-.293	-1.562
D GEL 1 4	5.56	1.61	-.65	-29.62	-.11	5.73	-.38	6.08	-.219	-.438	-.142	-.271
D GEL 2 1	4.28	1.97	-1.93	-82.71	-.88	5.27	-1.11	5.67	.190	.187	.678	-.673
D GEL 2 2	4.96	1.86	-1.25	-49.93	-.51	5.43	-.74	5.81	.579	.170	.780	-.024
D GEL 2 4	4.72	1.97	-1.49	-60.88	-.58	5.45	-.85	5.84	.344	-.118	.767	-.720
D GEL 3 1	5.34	1.71	-.77	-31.62	-.25	5.74	-.39	5.97	.273	-.068	-.124	-.441
D GEL 3 2	5.76	1.71	-.35	-12.92	-.03	5.85	-.16	6.05	.064	.025	.179	.134
D GEL 3 3	5.26	1.90	-.85	-40.15	-.28	5.69	-.43	5.90	.109	.080	.538	-.344
D GEL 3 4	6.56	1.73	.35	19.57	.46	5.99	.16	6.32	-.258	-.254	-.612	.102
D GEL 4 1	5.57	1.86	-.54	-25.39	-.15	5.77	-.29	5.99	-.011	.138	.170	-.658
D GEL 4 3	6.24	2.13	.03	5.46	.37	5.94	.12	6.25	.073	.259	.029	-.803
D GEL 4 4	4.80	1.87	-1.41	-59.29	-.52	5.48	-.80	5.82	.205	.261	-.046	-.428
D GEL 5 1	6.36	1.52	.15	5.97	.34	5.89	.08	6.24	-.321	-.038	-.196	-1.162
D GEL 5 2	5.76	1.90	-.45	-18.11	.05	5.79	-.22	6.15	-.054	-.789	-.618	-.672
D GEL 5 3	3.92	2.10	-2.29	-91.99	-1.06	5.16	-1.33	5.58	.749	.430	1.037	-.332
D GEL 5 4	4.16	2.17	-2.05	-77.90	-.90	5.26	-1.14	5.67	.855	.269	1.172	-.217
D JT 1 2	6.60	1.85	.39	15.47	.48	5.97	.21	6.29	-.342	.317	.490	-.724
D JT 1 3	5.64	1.78	-.57	-21.08	-.08	5.71	-.34	6.06	.314	1.291	.605	-.114
D JT 1 4	5.56	1.76	-.65	-34.04	-.14	5.70	-.41	6.06	-.758	-.905	-1.158	.229
D JT 2 1	6.08	1.89	-.13	-4.61	.21	5.87	-.09	6.20	-.075	.140	.355	-1.416
D JT 2 3	6.96	1.93	.75	30.81	.66	6.08	.40	6.34	-.383	-.076	-.780	-1.133
D JT 2 4	5.28	1.51	-.93	-40.33	-.29	5.60	-.60	5.95	-.113	.079	-.184	-.582
D JT 3 1	6.47	1.98	.36	15.72	.28	6.04	.15	6.23	-.315	-.565	-.775	-.745
D jT 3 2	5.92	2.04	-.29	-3.13	.12	5.78	-.13	6.12	.358	.188	.177	-1.307
D JT 3 2A	6.11	2.08	.00	1.58	.12	5.94	-.02	6.15	-.169	-.147	-.301	-1.019
D JT 3 3	6.20	1.63	-.01	-.54	.35	5.96	.05	6.27	-.254	-.501	-.387	-.639
D JT 3 4	6.28	1.74	.07	2.06	.20	5.87	-.10	6.19	-.278	.016	-.288	-1.040
D JT 4 1	5.96	1.84	-.25	-5.41	.06	5.76	-.19	6.09	.172	1.093	.646	-.467
D JT 4 2	6.28	1.95	.07	6.79	.19	5.82	-.07	6.14	.141	.613	.138	-1.074
D JT 4 3	7.00	1.96	.89	39.64	.57	6.11	.46	6.29	-.550	-.756	-.779	-.189
D JT 4 4	6.26	1.94	.15	9.33	.22	5.96	.09	6.16	-.242	-.183	-.102	-.817
D LG 1 1 1	7.68	1.91	1.47	62.38	1.11	6.37	.80	6.59	-.456	-.538	-.462	-1.027
D LG 1 1 2	7.54	2.07	1.43	63.81	.83	6.23	.73	6.37	-.568	-.535	-.869	-.090
D LG 1 1 3	7.29	1.96	1.17	52.39	.73	6.15	.59	6.33	-.644	-.326	-.441	-.096
D LG 1 1 4	5.99	2.16	-.13	-5.71	.11	5.88	.00	6.06	-.117	-.251	-.209	-.978
D LG 1 2 1	3.86	2.18	-2.25	-99.44	-.96	5.37	-1.13	5.62	.588	.513	.772	-.542
D LG 1 2 2	6.28	2.44	.07	4.66	.21	5.86	-.09	6.16	-.164	-.032	-.175	-1.094
D LG 1 2 3b	5.40	1.94	-.81	-33.96	-.30	5.54	-.59	5.86	.046	-.064	-.232	-.015
D LG 1 2 3a	5.40	1.96	-.81	-30.85	-.29	5.59	-.57	5.93	.192	.373	.565	-1.145

D LG 1 2 4	5.24	2.03	-.97	-36.16	-.29	5.59	-.57	5.96	.263	-.105	.070	-1.090
D LG 1 3 1	4.88	1.90	-1.33	-56.09	-.53	5.51	-.85	5.87	.165	.504	.157	-.725
D LG 1 3 3	6.16	2.08	-.05	-5.82	.22	5.89	-.03	6.24	-.473	-.463	-.137	-1.060
D LG 1 3 4	4.76	2.01	-1.45	-57.34	-.55	5.46	-.80	5.85	.465	.019	.895	-1.293
D LG 1 4 1	6.60	2.02	.39	16.54	.52	6.01	.26	6.31	-.285	-.554	-.435	-.848
D LG 1 4 2	7.52	1.87	1.31	60.43	.97	6.22	.67	6.48	-.267	.319	-.568	-.715
D LG 1 4 3	7.64	2.04	1.43	60.21	1.10	6.34	.84	6.57	-.746	-.387	-.957	.059
D LG 1 4 4	5.08	1.26	-1.13	-51.11	-.37	5.57	-.64	5.92	-.386	-.954	-.780	-.383
D LG 1 5 1	4.92	2.02	-1.29	-47.37	-.50	5.46	-.77	5.85	.600	.864	1.197	-1.032
D LG 1 5 2	7.52	1.71	1.31	62.41	1.07	6.29	.82	6.55	-.368	.027	.185	-.100
D LG 1 5 3	4.48	2.38	-1.73	-68.84	-.90	5.27	-1.06	5.67	.530	1.394	1.317	-.551
D LG 1 5 4	5.96	1.95	-.25	-7.19	.07	5.76	-.21	6.08	.054	.933	.425	-1.408
D LG 2 1 1	6.36	1.82	.25	22.21	.26	5.98	.14	6.17	.127	.192	.220	-1.011
D LG 2 1 2	5.84	2.32	-.37	-8.77	-.01	5.70	-.32	6.04	.320	.532	.358	-1.488
D LG 2 1 3	5.32	2.12	-.89	-33.16	-.28	5.58	-.54	5.95	.355	-.371	-.164	-1.020
D LG 2 1 4	5.00	1.80	-1.21	-54.92	-.36	5.57	-.59	5.92	-.246	-.822	-.080	-.705
D LG 2 2 1	6.56	1.98	.35	20.94	.49	6.05	.18	6.35	.223	-.094	-.387	-1.521
D LG 2 2 2	6.28	1.74	.07	2.97	.28	5.88	.02	6.16	-.233	.669	.090	-.188
D LG 2 2 3	5.12	2.30	-1.09	-36.50	-.36	5.51	-.65	5.86	.513	.199	.311	-1.130
D LG 2 2 4	5.56	1.73	-.55	-23.06	-.15	5.76	-.30	5.99	.144	-.179	-.214	-.633
D LG 2 3 1	5.44	1.95	-.67	-31.65	-.22	5.72	-.36	5.93	-.031	.187	.143	-.866
D LG 2 3 2	5.48	1.76	-.73	-32.50	-.11	5.70	-.36	6.07	-.145	-.113	.296	-1.086
D LG 2 3 3	7.68	1.99	1.47	61.69	1.08	6.26	.80	6.53	-.482	-.201	-.678	-1.207
D LG 2 3 4	7.20	2.04	.99	42.43	.79	6.13	.49	6.42	-.316	-.259	-.539	-1.427
D LG 2 4 1	6.60	1.80	.49	27.94	.39	6.01	.28	6.20	-.197	-.307	-.475	-.684
D LG 2 4 2	6.48	1.66	.27	11.63	.40	5.95	.09	6.28	-.280	-.056	-.021	-1.084
D LG 2 4 3	6.00	1.96	-.21	.00	.09	5.77	-.17	6.11	.448	.352	.261	-1.051
D LG 2 4 4	5.44	2.22	-.67	-25.47	-.17	5.74	-.28	5.94	.137	.160	.126	-.973
D LG 2 5 1	5.20	1.91	-1.01	-43.54	-.36	5.57	-.65	5.93	-.068	-.350	-.020	-.770
D LG 2 5 2	7.56	2.10	1.45	65.05	.82	6.24	.72	6.40	-.651	-.529	-.743	-.201
D LG 2 5 3	6.56	2.20	.35	11.96	.45	5.97	.21	6.27	-.494	-.435	-.338	-.757
D LG 2 5 4	5.63	1.99	-.48	-20.48	-.12	5.78	-.25	5.99	.064	.276	.131	-.712
D P 1 1	5.58	1.86	-.24	-.13	-.09	5.72	-.13	5.78	.346	.195	.079	-.550
D P 1 2	5.25	2.29	-.57	-19.15	-.18	5.58	-.31	5.69	.262	-.151	.374	-1.265
D P 1 3	6.31	2.24	.24	16.47	.11	6.10	.09	6.12	-.045	.095	.010	-1.172
D P 1 4	5.28	2.00	-.79	-30.35	-.33	5.90	-.39	5.92	.249	-.167	.028	-1.024
D P 2 1	4.94	2.42	-1.12	-56.46	-.48	5.85	-.51	5.84	-.119	-.159	-.087	-1.110
D P 2 2	5.82	2.21	-.25	-12.17	-.09	6.04	-.12	6.03	-.207	-.318	-.184	-1.173
D P 2 3	4.61	2.02	-1.21	-57.58	-.59	5.40	-.75	5.61	.181	-.069	-.073	-.710
D P 2 4	4.90	2.04	-.93	-50.57	-.41	5.52	-.51	5.69	-.146	.087	.429	-1.014
D P 3 1	7.55	2.09	1.73	74.04	.87	6.35	.96	6.19	-.876	-.595	-.906	-.077
D P 3 2	7.39	2.17	1.57	68.99	.80	6.31	.88	6.15	-.620	-.753	-.792	-.661
D P 3 3	7.05	2.04	.98	53.15	.46	6.25	.47	6.29	-.311	-.343	-.475	-1.157
D P 3 4	5.68	1.95	-.39	-18.98	-.18	5.97	-.21	5.96	-.157	-.133	-.149	-.934
D P 4 3	6.39	2.07	.57	27.69	.31	5.99	.29	5.95	-.305	-.453	-.354	-.720
D P 4 4	6.52	2.15	.70	37.07	.35	6.02	.37	5.99	-.039	-.157	.009	-.828
D P 5 1	6.12	2.36	.06	2.13	.04	6.06	.02	6.07	-.278	-.230	-.112	-.936
D P 5 2	5.32	1.68	-.89	-36.66	-.20	5.67	-.47	6.04	.123	-.016	.630	-.883
D P 5 2	5.42	2.03	-.65	-37.71	-.28	5.93	-.30	5.94	-.332	-.340	-.464	-.805
D P 5 3	5.84	2.43	.01	-2.21	.01	5.82	-.05	5.88	-.215	-.401	-.178	-.874
D P 5 4	7.04	2.20	1.22	51.99	.59	6.22	.64	6.10	-.537	-.438	-.445	-.307
D PH 3 3	4.58	2.19	-1.48	-64.72	-.66	5.74	-.70	5.71	.352	.433	.570	-1.106
D PH 3 4	5.96	2.15	-.25	-12.61	.07	5.82	-.19	6.14	-.337	.040	.007	-.664
D PH 3 4	7.05	2.04	.98	46.74	.44	6.21	.44	6.27	-.419	-.087	-.192	-.658

D PH 4 1	5.97	2.07	-.09	-2.38	-.04	5.99	-.08	6.03	-.158	-.162	-.074	-.795
D PH 4 21	6.39	2.15	.57	23.56	.27	5.99	.28	5.97	-.410	.015	-.268	-.644
D PHW 1 1	5.78	2.16	-.28	-8.15	-.15	5.97	-.15	5.98	-.028	.363	.276	-.767
D PHW 1 2	6.85	1.91	.78	39.25	.39	6.20	.39	6.23	-.376	-.188	-.042	-.867
D PHW 1 3	6.12	1.59	-.09	-.18	.24	5.88	-.03	6.24	.171	.208	.115	-1.499
D PHW 1 4	7.04	1.95	1.22	57.48	.61	6.16	.65	6.05	-.449	-.190	-.501	-.521
D PHW 2 1	7.12	2.00	1.30	59.86	.66	6.21	.74	6.09	-.488	-.007	-.328	-.683
D PHW 2 2	6.06	1.75	-.05	-.23	.12	5.92	-.01	6.12	-.118	-.246	-.202	.024
D PHW 2 3	7.09	2.55	1.03	39.86	.48	6.26	.48	6.26	-.581	-.446	-.513	-.888
D PHW 2 4	5.82	2.50	-.25	-14.15	-.08	5.99	-.08	6.00	-.219	-.285	-.151	-.923
D PHW 3 1	6.32	2.22	.26	7.76	.11	6.08	.07	6.13	-.529	-.344	-.416	-.731
D PHW 3 3	6.48	2.29	.66	27.04	.41	6.03	.43	5.99	-.414	-.329	-.298	-1.024
D PHW 3 4	5.96	2.01	-.25	-5.68	.20	5.92	-.07	6.28	.259	-.147	-.163	-1.068
D PHW 4 1	7.24	1.99	1.42	64.95	.72	6.25	.77	6.13	-.567	.004	-.337	-.381
D PHW 4 2	7.90	2.13	2.07	84.76	1.03	6.45	1.16	6.24	-1.059	-.335	-.894	.434
D PHW 4 3	7.98	1.63	1.92	93.26	.91	6.39	.92	6.47	-.716	-.503	-.333	-.202
D PHW 4 4	5.40	2.02	-.66	-36.73	-.29	5.93	-.33	5.92	-.287	-.309	-.073	-.733
D PHW 5 1	5.62	2.18	-.45	-15.66	-.19	5.94	-.23	5.97	.019	-.244	-.300	-1.020
D PHW 5 2	5.62	2.80	-.45	-32.05	-.18	5.97	-.21	5.97	-.384	-.342	-.386	-1.324
D PHW 5 3	6.24	1.83	.03	12.28	.32	5.95	.06	6.28	.596	.178	.150	-.820
D PHW 5 4	7.30	2.06	1.48	66.45	.76	6.24	.84	6.12	-.602	-.411	-.321	-.449
D SRR 1 1 1	6.88	2.15	.67	31.97	.59	6.06	.35	6.32	-.093	.118	-.290	-1.384
D SRR 1 1 2	5.84	2.12	-.37	-21.32	.02	5.82	-.28	6.12	-.281	-.451	-.347	-1.247
D SRR 1 1 3	6.20	2.28	.09	1.20	.17	5.93	.04	6.14	-.257	-.136	-.052	-.803
D SRR 1 2 1	5.88	1.72	-.33	-12.45	.10	5.79	-.19	6.13	-.012	-.041	.260	-.820
D SRR 1 2 2	5.16	1.46	-1.05	-44.33	-.29	5.65	-.55	5.99	.041	.018	-.122	-.327
D SRR 1 2 3	4.20	1.78	-2.01	-85.89	-.92	5.28	-1.17	5.69	.349	-.123	.671	-.194
D SRR 1 2 4	5.36	1.98	-.85	-37.77	-.12	5.66	-.40	6.02	-.049	-.783	-.313	-.890
D SRR 1 3 1	5.08	2.04	-1.13	-43.75	-.37	5.55	-.63	5.92	.349	.056	.851	-1.002
D SRR 1 3 3	3.44	1.42	-2.77	-118.47	-1.41	5.02	-1.67	5.42	.581	.015	-.021	-.184
D SRR 1 5 1	4.92	2.08	-1.29	-53.02	-.41	5.51	-.68	5.91	.235	-.061	.551	-.724
D SRR 1 5 2	4.48	1.81	-1.73	-70.81	-.72	5.33	-.94	5.68	.602	.277	.460	-.394
D SRR 1 5 3	4.64	1.63	-1.57	-66.56	-.66	5.42	-.97	5.82	.287	-.082	.110	-.950
D SRR 1 5 4	4.52	1.94	-1.69	-67.52	-.66	5.36	-.91	5.75	.531	.145	.275	-.455
D SRR 1 6 1b	5.48	2.14	-.73	-24.21	-.07	5.65	-.32	5.99	.416	.567	1.249	-.851
D SRR 1 6 1a	4.24	2.17	-1.97	-84.86	-.80	5.28	-1.05	5.67	.317	.217	.645	-.822
D SRR 1 6 4a	5.96	2.51	-.25	-10.23	.24	5.85	-.06	6.18	-.124	-.124	.239	-1.073
D SRR 1 6 4b	4.32	2.06	-1.89	-72.42	-.79	5.32	-1.05	5.71	.772	.477	.806	-.191
D SRR 2 6 1	5.32	1.97	-.89	-31.08	-.16	5.69	-.38	6.05	.539	.217	.544	-.430
D SRR1 1 4	7.78	1.88	1.95	92.56	1.01	6.36	1.10	6.18	-.568	-.679	-.593	-.585
D SRR1 3 2	3.69	1.82	-2.13	-94.98	-1.02	5.08	-1.24	5.41	.789	.199	.757	-.069
D SRR1 3 4	4.27	1.95	-1.55	-78.37	-.69	5.27	-.87	5.50	.049	-.146	-.031	-1.057
D SRR1 4 1	4.46	1.91	-1.36	-63.74	-.66	5.26	-.87	5.50	.288	.518	.510	-.568
D SRR1 4 2	4.42	1.86	-1.40	-66.89	-.66	5.32	-.83	5.54	.294	.261	.384	-.497
D SRR1 4 3	3.64	2.14	-2.18	-90.61	-1.05	5.02	-1.30	5.37	.925	.786	1.247	.021
D SRR1 4 4	4.19	1.75	-1.63	-79.22	-.75	5.23	-.95	5.50	.257	-.051	.504	-.521
D SRR1 6 1	3.57	1.78	-2.25	-110.19	-1.07	5.03	-1.32	5.38	.370	.080	.521	-.975
D SRR1 6 4	4.21	1.93	-1.61	-75.90	-.76	5.20	-.99	5.49	.333	.472	.919	-.634
D SRR2 4 1	6.29	2.28	.23	12.90	.14	6.10	.11	6.12	-.170	-.041	.094	-1.064
D SRR2 4 2	4.82	2.44	-1.25	-50.50	-.55	5.80	-.63	5.81	.369	.181	.165	-1.101
D SRR2 4 3	4.21	1.73	-1.61	-81.03	-.75	5.20	-.92	5.47	.098	.189	.732	-.750
D SRR2 4 4	4.39	2.07	-1.43	-65.06	-.62	5.25	-.81	5.48	.355	.420	.440	-.489
D SRR2 5 1	5.32	2.02	-.74	-25.64	-.34	5.92	-.39	5.93	.373	.410	.445	-.351
D SRR2 5 2	4.00	2.20	-2.06	-96.16	-.89	5.65	-.93	5.64	.173	-.047	.355	-.971

D SRR2 5 3	5.46	1.86	-.36	-18.34	-.10	5.65	-.17	5.74	-.109	-.108	.147	-.735
D SRR2 5 4	4.94	1.86	-.88	-35.34	-.38	5.44	-.50	5.63	.379	.688	.952	-.431
D SRR2 6 2	4.63	1.77	-1.19	-56.63	-.52	5.39	-.65	5.58	.147	-.034	.589	-.606
D SRR2 6 3	5.77	2.25	-.29	-15.44	-.12	6.01	-.16	6.03	-.098	-.025	.019	-1.020
D SRR2 6 4	6.00	2.00	-.06	-1.76	-.02	6.04	-.03	6.05	-.035	.238	.437	-1.127
D WMC 1 1 1	6.48	2.31	.27	11.21	.43	5.91	.16	6.25	-.218	-.317	-.047	-1.032
D WMC 1 1 2	5.80	2.02	-.41	-19.53	.06	5.75	-.18	6.09	-.087	.511	.556	-.723
D WMC 1 1 3	4.92	1.61	-1.29	-57.43	-.51	5.48	-.77	5.85	-.108	-.409	.096	-1.361
D WMC 1 1 4	4.61	1.86	-1.50	-75.01	-.58	5.56	-.74	5.80	.109	-.082	-.026	-.976
D WMC 1 2 1	5.20	2.20	-1.01	-38.69	-.38	5.49	-.68	5.88	.343	.282	-.133	-.794
D WMC 1 2 2	4.01	2.16	-2.10	-92.61	-.95	5.39	-1.11	5.65	.605	.788	.613	-.578
D WMC 1 2 3	5.31	1.97	-.80	-34.90	-.26	5.72	-.41	5.94	.128	.100	.031	-1.004
D WMC 1 2 4	5.49	1.88	-.63	-33.32	-.19	5.75	-.33	5.96	-.127	-.117	-.190	-.424
D WMC 1 3 1	5.53	1.91	-.58	-21.28	-.15	5.76	-.29	5.99	.209	.237	.147	-.340
D WMC 1 3 2	6.30	2.37	.19	11.56	.21	5.87	.08	6.05	-.038	.219	.067	-1.222
D WMC 1 3 3	4.46	2.37	-1.65	-71.09	-.70	5.46	-.85	5.69	.365	.929	.856	-.390
D WMC 1 3 4	5.13	2.27	-.98	-49.48	-.38	5.63	-.54	5.86	-.018	-.058	-.063	-1.084
D WMC 1 4 1	5.96	1.76	-.15	-3.92	.03	5.84	-.11	6.04	-.031	.594	-.181	-.742
D WMC 1 4 2	5.00	1.44	-1.21	-52.68	-.46	5.52	-.74	5.88	.000	-.054	.104	-1.433
D WMC 1 4 3	4.28	2.21	-1.93	-84.95	-.81	5.29	-1.06	5.74	-.007	-.113	.366	-1.214
D WMC 1 4 4	4.16	1.84	-2.05	-84.54	-.91	5.25	-1.19	5.66	.659	.053	1.278	-.105
D WMC 1 5 1	5.76	1.79	-.45	-16.12	.02	5.77	-.24	6.14	.095	-.123	.119	-.671
D WMC 1 5 2	4.47	2.03	-1.64	-78.28	-.66	5.54	-.82	5.77	.265	.109	.324	-1.001
D WMC 1 5 3	4.52	1.90	-1.69	-69.38	-.73	5.36	-1.00	5.68	.323	.383	.996	-.977
D WMC 1 5 4	5.76	1.97	-.35	-14.87	-.05	5.81	-.18	6.00	-.056	-.153	-.211	-.298
D WMC 2 1 1	5.04	2.13	-1.17	-46.94	-.34	5.52	-.66	5.88	.248	.146	1.316	-1.412
D WMC 2 1 2	4.31	2.03	-1.80	-82.37	-.72	5.46	-.87	5.73	.444	.354	.743	-.611
D WMC 2 1 3	4.68	2.06	-1.53	-63.24	-.63	5.38	-.91	5.80	.443	.356	1.086	-.079
D WMC 2 1 4	4.72	1.49	-1.49	-65.62	-.60	5.44	-.87	5.81	.026	.219	-.185	-.967
D WMC 2 2 1	5.08	1.98	-1.13	-48.10	-.37	5.54	-.58	5.90	.080	-.129	-.357	-.641
D WMC 2 2 2	5.08	1.85	-1.13	-54.00	-.31	5.58	-.59	5.97	-.455	-.242	.321	-.627
D WMC 2 2 3b	4.76	1.23	-1.45	-56.61	-.59	5.46	-.83	5.83	.950	-.334	-.499	.243
D WMC 2 2 3a	5.16	1.72	-1.05	-47.23	-.32	5.59	-.60	5.95	-.143	-.554	.136	-1.042
D WMC 2 2 4	5.28	1.90	-.93	-34.67	-.27	5.56	-.53	5.94	.517	.410	.337	-.312
D WMC 2 3 1	6.88	1.76	.67	23.85	.65	6.13	.35	6.43	-.745	-.352	-.583	-.388
D WMC 2 3 2	5.00	1.44	-1.21	-53.53	-.50	5.55	-.80	5.90	-.080	.738	.212	-.659
D WMC 2 3 3	4.72	1.77	-1.49	-57.20	-.63	5.42	-.91	5.81	.626	.626	.571	-.420
D WMC 2 3 4	6.56	2.39	.45	16.62	.36	5.95	.22	6.12	-.354	-.260	-.050	-.916
D WMC 2 4 1	5.76	1.69	-.35	-19.24	-.06	5.84	-.20	6.05	-.209	-.034	-.064	-.763
D WMC 2 4 2	4.70	1.84	-1.41	-68.02	-.59	5.55	-.76	5.80	.110	.349	.187	-.892
D WMC 2 4 4	6.76	1.74	.55	24.52	.52	6.03	.20	6.31	-.513	-.208	-.170	.449
D WMC 2 5 1	4.80	1.96	-1.41	-58.67	-.53	5.47	-.79	5.82	.237	.352	.403	-.718
D WMC 2 5 2	6.33	2.06	.22	9.14	.26	5.94	.12	6.14	-.311	-.034	-.186	-.639
D WMC 2 5 4	5.86	2.29	-.25	-16.68	.01	5.79	-.13	5.99	-.276	-.115	-.092	-.873
DSRR1 6 2A	4.28	1.77	-1.54	-79.75	-.67	5.26	-.87	5.50	.077	.069	.848	-.978
DSRR1 6 2B	4.75	2.13	-1.08	-47.44	-.50	5.35	-.65	5.57	.263	.438	.680	-.508
DSRR1 6 3B	5.03	2.19	-.79	-31.08	-.33	5.52	-.45	5.67	.322	.079	.242	-.452
DSRR1 6 3A	5.43	2.08	-.39	-18.57	-.14	5.64	-.21	5.75	-.030	.056	.474	-.380
S A 1	6.06	2.47	.00	-1.64	.01	6.06	-.03	6.02	-.192	-.075	-.175	-.911
S A 2	7.35	2.23	1.29	53.96	.60	6.28	.57	6.33	-.673	-.753	-.765	-.556
S A 3	4.80	2.27	-1.26	-46.25	-.54	5.81	-.58	5.81	.411	.591	.744	-1.004
S A 5	5.15	2.56	-.91	-30.15	-.35	5.84	-.40	5.87	.372	.070	.363	-1.094
S A 6	6.06	2.11	.00	8.94	-.03	6.02	-.09	6.05	.097	.005	-.157	-1.017
S A 7	6.93	2.31	1.10	44.36	.60	6.13	.63	6.05	-.599	-.881	-.786	-.546

S A 8	7.85	1.97	2.03	89.68	1.03	6.45	1.15	6.24	-.824	-.692	-.927	.031
S A 9	5.80	2.31	-.26	-13.69	-.11	5.99	-.12	5.98	-.148	-.125	-.081	-1.156
S A 10	5.14	2.99	-.92	-39.00	-.37	5.85	-.40	5.88	.030	.053	.182	-1.390
S A 11	7.84	1.80	1.73	80.86	1.01	6.30	.90	6.46	-.755	-.613	-.573	-.235
S A 12	7.04	2.03	1.22	55.85	.62	6.18	.68	6.08	-.555	-.565	-.938	-.502
S A 14	5.49	1.89	-.33	-13.85	-.06	5.67	-.13	5.76	-.015	-.669	-.249	-.715
S A 15	4.48	2.08	-1.59	-77.99	-.67	5.75	-.72	5.73	.058	-.371	.118	-.977
S A 16	6.98	2.12	.92	42.73	.42	6.21	.40	6.25	-.355	.032	-.103	-.538
S A 17	6.88	1.64	.67	28.03	.61	6.10	.30	6.40	-.468	-.188	-.622	-.559
S A 18	5.80	2.16	-.46	-20.02	-.20	5.94	-.23	5.96	.017	-.001	.091	-.855
S A 19	6.85	2.37	.78	38.63	.36	6.15	.34	6.21	-.220	-.216	-.406	-1.149
S A 20	6.37	1.79	.26	19.09	.24	5.97	.10	6.16	-.018	-.127	-.333	.173
S A 21	6.13	2.28	.31	15.54	.24	5.89	.24	5.90	-.080	-.206	-.109	-.733
S A 23	5.96	2.64	.13	10.89	.17	5.80	.13	5.82	-.011	-.207	-.229	-1.349
S A 24	7.72	1.77	1.51	65.50	1.13	6.36	.83	6.57	-.676	-1.078	-1.624	.032
S B 1	7.63	2.30	1.52	53.10	.85	6.26	.73	6.42	-1.147	-.601	-.722	.687
S B 2	6.72	2.01	.51	17.37	.59	6.06	.30	6.33	-.516	-.286	-.535	-.632
S B 3	6.96	2.16	.85	34.59	.59	6.13	.47	6.31	-.581	-.381	-.369	-.434
S B 4	6.28	2.30	.07	2.85	.42	6.02	.14	6.26	-.172	-.181	-.262	-.933
S B 5	6.68	2.01	.47	21.76	.60	6.08	.31	6.37	-.252	.424	.236	-.355
S B 6	6.16	2.21	.05	-3.25	.18	5.93	.09	6.10	-.442	-.296	-.324	-.685
S B 7	6.11	2.13	.00	-2.15	.13	5.96	.00	6.15	-.289	-.404	-.184	-.772
S B 8	5.16	2.20	-.95	-44.65	-.33	5.72	-.45	5.93	.132	-.041	.296	-.780
S B 10	5.70	2.46	-.41	-19.43	-.09	5.84	-.24	6.05	-.019	-.021	.098	-.805
S B 11	7.66	2.04	1.55	62.44	.88	6.28	.77	6.44	-1.033	-.670	-.968	.308
S B 12	6.34	2.15	.23	9.52	.25	5.97	.15	6.14	-.338	-.160	-.194	-.906
S BC 3	3.72	2.07	-2.34	-108.66	-1.04	5.62	-1.07	5.59	.493	.329	.587	-.822
S BC 4	5.08	2.33	-1.13	-44.45	-.35	5.57	-.61	5.93	.289	.329	.660	-.868
S BC 5	4.67	1.74	-1.15	-48.97	-.51	5.43	-.64	5.62	.400	-.152	.103	-.359
S BC 7	6.41	2.29	.30	15.12	.28	5.99	.13	6.17	-.156	-.136	-.295	-.952
S BC 8	4.88	2.20	-1.19	-48.88	-.53	5.82	-.58	5.79	.285	.267	.369	-.652
S BC 9	5.94	1.96	.12	5.42	.04	5.79	-.01	5.83	-.167	.135	-.167	-.746
S BC 10	5.67	1.96	-.15	-9.27	-.08	5.69	-.16	5.77	-.135	.044	-.230	-.638
S BC 12	5.69	1.96	-.13	-7.58	-.07	5.75	-.14	5.80	-.199	-.193	-.243	-.873
S BC 13	6.43	2.14	.37	21.24	.16	6.10	.15	6.14	-.133	-.171	-.568	-1.091
S BC 14	6.77	2.80	.71	24.44	.34	6.19	.34	6.20	-.360	-.092	-.190	-1.226
S BC 15	5.48	1.90	-.34	-8.78	-.18	5.65	-.27	5.74	.249	.440	.065	-.380
S DC 2	5.40	2.11	-.66	-32.59	-.31	5.91	-.37	5.91	-.021	.155	.209	-.816
S DC 3	5.19	1.92	-.63	-31.74	-.30	5.62	-.38	5.73	-.021	-.277	-.147	-.564
S DC 4	6.40	2.09	.29	16.81	.27	6.03	.13	6.25	-.078	-.198	-.282	-.525
S DC 5	5.48	1.61	-.73	-29.94	-.16	5.66	-.43	6.02	.092	.168	.695	-1.155
S DC 6	5.19	2.50	-.93	-41.03	-.30	5.71	-.43	5.95	.100	-.113	.000	-.826
S DC 8	7.48	1.75	1.66	83.75	.84	6.29	.91	6.14	-.338	-.135	-.529	-.719
S DC 9	6.66	1.85	.55	25.87	.37	6.07	.25	6.26	-.381	-.195	-.471	-.620
S DC 11	5.05	2.13	-1.02	-50.33	-.46	5.83	-.50	5.84	-.050	.033	.141	-.735
S DC 12	5.51	2.37	-.56	-26.00	-.24	5.93	-.28	5.95	-.041	-.104	-.097	-.952
S DC 13	5.44	1.98	-.77	-26.59	-.17	5.64	-.46	5.98	.394	-.044	.341	-.947
S DC 15	5.94	2.15	-.12	-8.60	-.09	6.04	-.11	6.02	-.238	.127	-.246	-1.315
S DC 16	4.57	2.12	-1.25	-58.05	-.58	5.46	-.69	5.63	.228	-.053	.160	-.650
S DC 17	4.92	1.98	-1.29	-53.62	-.40	5.51	-.64	5.89	.199	-.215	.091	-.690
S DC 19	5.88	2.51	-.19	-9.94	-.05	6.00	-.07	6.03	-.149	-.011	.090	-.955
S DC 21	7.15	2.24	1.09	50.42	.49	6.24	.48	6.25	-.387	-.191	-.176	-1.016
S DC 22	5.84	2.03	-.37	-10.34	.13	5.79	-.11	6.10	.265	-.343	-.226	-.871
S F 1	6.12	2.11	-.09	-7.35	.29	5.92	.00	6.23	-.484	.048	.256	-.382

S F 2	6.71	2.22	.64	27.38	.31	6.16	.31	6.22	-.471	-.171	-.172	-.784
S F 3	6.66	1.88	.84	33.38	.41	6.04	.43	6.00	-.612	-.646	-.738	-.313
S F 4	7.40	1.97	1.34	61.89	.63	6.28	.61	6.32	-.593	-.735	-.736	-.513
S F 5	5.62	2.99	-.45	-18.55	-.19	5.94	-.26	5.99	.089	.037	.076	-1.351
S F 7	4.95	2.00	-1.11	-51.40	-.50	5.83	-.55	5.81	.144	-.139	.055	-.659
S F 9	6.36	1.93	.54	27.78	.32	5.96	.33	5.96	-.256	.243	-.041	-.642
S F 10	6.92	2.06	.86	45.96	.35	6.20	.33	6.24	-.140	-.099	-.160	-.773
S F 11	6.49	1.98	.37	19.50	.32	6.02	.18	6.23	-.204	.032	.020	-.689
S F 12	5.73	1.70	-.09	-7.19	-.02	5.75	-.07	5.80	-.311	.196	.457	-.690
S F 14	6.91	1.99	.80	37.61	.55	6.13	.44	6.31	-.459	-.167	-.461	-.538
S F 15	5.85	2.17	-.22	-8.39	-.06	6.01	-.07	6.02	-.048	-.227	.006	-1.057
S F 16	6.09	1.70	.27	8.47	.22	5.84	.20	5.86	-.427	-.155	-.248	-.543
S F 18	5.55	3.18	-.51	-24.75	-.24	5.96	-.26	5.92	-.112	-.096	-.077	-1.538
S F 19	6.49	1.65	.67	35.86	.35	5.94	.35	5.93	-.106	.867	.622	-.697
S F 20	5.12	1.89	-.70	-42.10	-.29	5.64	-.36	5.74	-.223	-.473	-.106	-.910
S F 21	6.06	1.86	.24	3.79	.14	5.90	.12	5.89	-.533	-.390	-.403	-.306
S F 21	6.68	1.89	.47	19.72	.53	6.00	.27	6.33	-.448	-.489	-.279	-.352
S F 22	7.16	1.93	1.34	62.19	.73	6.23	.78	6.11	-.706	-.764	-.859	.723
S FNL 1	5.09	1.92	-1.03	-52.64	-.36	5.70	-.51	5.90	-.072	-.311	-.185	-.657
S FNL 2	4.93	1.97	-1.18	-52.53	-.46	5.63	-.59	5.85	.187	.107	.257	-.918
S FNL 3	6.67	2.16	.56	28.72	.39	6.00	.30	6.17	-.227	.274	.183	-1.021
S FNL 4	5.71	2.06	-.40	-13.96	-.09	5.76	-.24	5.95	.115	.479	.262	-.702
S FNL 5	5.24	2.26	-.97	-36.86	-.28	5.54	-.51	5.88	.338	-.088	.444	-.883
S FNL 6	5.17	2.23	-.94	-45.77	-.34	5.66	-.46	5.85	.042	.062	-.069	-.910
S FNL 7	4.83	1.81	-1.28	-66.65	-.50	5.57	-.65	5.80	-.023	-.009	.166	-.760
S FNL 8	4.49	2.31	-1.63	-69.65	-.66	5.49	-.80	5.71	.510	.689	.855	-.647
S FNL 9	5.49	1.97	-.63	-39.26	-.20	5.74	-.33	5.95	-.411	-.227	-.390	-.749
S FNL 10	4.41	1.85	-1.70	-82.28	-.73	5.49	-.89	5.72	.255	.395	.443	-.550
S FNL 11	5.72	2.49	-.49	-19.07	.05	5.72	-.19	6.07	.012	-.202	.078	-.981
S FNL 12	4.96	2.07	-1.25	-50.23	-.49	5.47	-.74	5.84	.429	1.535	1.359	-.189
S FNL 13	6.56	2.18	.35	8.18	.50	6.04	.21	6.31	-.749	-.636	-.468	-.193
S FNL 14	4.92	2.72	-1.29	-55.46	-.43	5.47	-.67	5.83	.009	.302	.587	-1.248
S FNL 15	4.11	1.80	-2.00	-91.54	-.87	5.46	-1.03	5.71	.598	.339	.528	.115
S FNL 16	5.00	2.20	-1.21	-39.92	-.42	5.51	-.66	5.86	.926	.588	1.044	.014
S FNL 17	5.21	2.16	-.90	-43.26	-.30	5.67	-.46	5.87	.059	.306	.185	-.779
S FNL 18	4.06	2.32	-2.05	-85.39	-.85	5.40	-.99	5.64	.665	.608	1.136	-.199
S FNL 19	5.76	2.05	-.35	-13.22	-.03	5.81	-.18	6.01	.074	.193	.101	-.628
S FNL 20	5.56	2.08	-.55	-26.54	-.18	5.74	-.33	5.96	-.041	-.006	.017	-.463
S FNL 21	5.88	1.83	-.33	-9.36	.03	5.72	-.23	6.06	.286	.728	.484	-.749
S FNL 22	5.36	2.18	-.85	-34.16	-.24	5.65	-.51	5.98	.159	.565	.244	-.534
S FNL 23	4.41	1.81	-1.70	-84.41	-.71	5.52	-.85	5.74	.201	.413	.897	-.661
S FNL 24	3.90	1.77	-2.21	-105.61	-.98	5.37	-1.14	5.63	.427	.218	.363	-.514
S LG 1 2	6.37	2.63	.31	18.33	.13	6.12	.10	6.13	.000	.083	.005	-1.417
S LG 1 3	4.88	2.09	-.94	-47.46	-.45	5.45	-.61	5.63	-.020	.013	.024	-.818
S LG 1 5	3.76	2.10	-2.06	-89.56	-.96	5.11	-1.13	5.41	.642	.148	.472	-.185
S LG 1 7	3.85	1.84	-1.97	-95.43	-.91	5.17	-1.11	5.47	.289	-.038	.456	-.807
S LG 1 7	4.88	2.13	-1.33	-48.45	-.56	5.44	-.83	5.82	.449	.886	.817	-1.252
S LG 1 8	3.06	2.03	-2.76	-121.31	-1.35	4.83	-1.63	5.25	.788	.785	1.249	-.186
S LG 1 9	5.66	2.36	-.40	-19.79	-.16	5.93	-.17	5.97	-.140	-.039	.210	-.910
S LG 1 16	5.56	1.83	-.65	-26.09	-.12	5.64	-.40	5.97	.203	.045	.159	-.299
S LG 1 17	3.24	2.70	-2.58	-97.59	-1.28	4.78	-1.60	5.19	1.002	.797	.701	-.379
S LG 1 18	5.94	2.55	-.12	-8.62	-.04	6.02	-.04	6.03	-.215	-.036	.151	-1.170
S LG 1 22	6.29	2.03	.23	-.19	.11	6.08	.12	6.14	-.725	-.262	-.176	-.500
S LG 1 24	4.20	2.33	-2.01	-81.41	-.92	5.23	-1.18	5.62	.415	.078	.039	-.880

S LG 1 24	5.58	2.14	-.48	-28.55	-.22	5.94	-.25	5.94	-.267	-.120	-.096	-.943
S LG 2 1	5.60	2.32	-.46	-18.00	-.20	5.94	-.22	5.96	.092	.232	.299	-.943
S LG 2 2	4.59	1.86	-1.53	-71.12	-.62	5.50	-.77	5.74	.339	.479	.651	.078
S LG 2 3	6.38	2.61	.32	9.69	.21	6.09	.21	6.16	-.318	-.314	-.345	-1.051
S LG 2 4	5.93	1.97	.10	9.43	.13	5.75	.09	5.80	.055	-.222	-.116	-.661
S LG 2 5	4.82	2.25	-1.00	-47.54	-.41	5.36	-.54	5.55	.063	.320	.364	-.750
S LG 2 6	6.71	2.36	.64	26.71	.31	6.18	.28	6.20	-.430	-.005	-.041	-.934
S LG 2 7	6.91	2.49	.84	32.98	.40	6.18	.40	6.23	-.455	-.188	-.168	-.832
S LG 2 9	6.51	1.82	.69	37.07	.35	5.97	.33	5.92	-.182	.068	-.361	-.805
S LG 2 11	6.52	2.47	.46	23.27	.23	6.09	.22	6.18	-.135	-.020	.103	-1.286
S LG 2 13	4.75	1.84	-1.05	-48.84	-.50	5.40	-.66	5.58	.282	.077	-.443	-.269
S LG 2 14	5.24	2.03	-.97	-38.04	-.29	5.58	-.55	5.92	.205	.223	.660	-1.290
S LG 2 15	7.12	1.88	1.06	50.11	.50	6.22	.48	6.27	-.562	-.036	-.040	-.457
S LG 2 16	6.12	2.19	-.09	2.12	.14	5.75	-.14	6.07	-.009	.002	-.043	-.500
S LG 2 17	5.60	2.68	-.61	-24.32	-.20	5.60	-.50	5.93	.075	.215	.323	-1.031
S LG 2 18	5.41	1.99	-.70	-26.26	-.19	5.74	-.34	5.98	.266	.051	.155	-.690
S LG 2 19	4.99	1.75	-.84	-39.73	-.35	5.50	-.46	5.67	.090	.310	.636	-.781
S LG 2 20	6.85	2.27	.78	34.41	.37	6.20	.35	6.27	-.371	-.420	-.440	-.700
S LG 2 21	5.63	2.02	-.19	-6.91	-.04	5.66	-.10	5.76	-.101	.114	.175	-.646
S LG 2 23	3.80	1.82	-2.26	-110.57	-1.03	5.61	-1.08	5.58	.338	.521	.511	-1.131
S LG 2 24	7.09	2.01	1.27	56.76	.63	6.17	.69	6.07	-.549	-.623	-.867	-.304
S LG 2 25	6.55	2.22	.73	35.80	.37	5.93	.38	5.91	-.200	-.123	-.101	-1.011
S PH 18	5.48	2.20	-.73	-36.82	-.12	5.66	-.38	5.99	-.346	-.756	-.123	-1.068
S PH 2	5.47	1.90	-.64	-27.07	-.19	5.80	-.34	6.03	.093	-.200	-.227	-.914
S PH 3	6.23	2.06	.12	4.97	.17	5.96	.04	6.16	-.254	-.278	-.338	-.308
S PH 4	5.00	1.78	-1.21	-47.66	-.44	5.52	-.74	5.92	.383	.380	.188	-1.021
S PH 5	5.59	1.85	-.53	-20.07	-.17	5.78	-.31	5.98	.200	.214	-.007	-.511
S PH 6	7.96	1.57	1.85	88.78	1.04	6.33	.93	6.49	-.854	-.085	-.200	.376
S PH 7	7.20	1.89	.99	38.72	.82	6.20	.56	6.47	-.594	.152	-.663	-.785
S PH 8	5.94	1.96	-.17	-7.71	.04	5.89	-.10	6.08	-.082	.014	-.125	-.645
S PH 9	6.54	2.30	.43	18.47	.33	6.07	.20	6.26	-.300	-.336	-.417	-.969
S PH 13	4.44	1.82	-1.67	-79.79	-.67	5.53	-.81	5.76	.105	-.123	-.225	-.811
S PH 14	5.10	2.04	-1.01	-44.54	-.38	5.70	-.54	5.92	.298	.394	.219	-.489
S PH 15	6.39	2.18	.27	9.93	.27	6.03	.14	6.23	-.326	-.273	-.220	-.751
S PH 16	6.23	1.98	.12	12.37	.19	5.99	.06	6.20	.029	-.144	-.144	-.682
S PH 17	6.09	1.74	-.03	-2.01	.13	5.92	.02	6.11	-.275	-.587	-.278	-.347
S PH 19	6.27	1.83	.16	3.27	.22	6.00	.08	6.19	-.453	-.229	-.361	.080
S PH 20	5.80	2.18	-.41	-12.28	.04	5.85	-.21	6.13	.246	-.057	-.311	-1.095
S PH 22	6.04	2.13	-.17	-5.82	.22	5.91	-.09	6.26	-.149	-.109	.288	-.451
S PW 1	6.20	2.52	-.01	-3.38	.30	5.93	.03	6.24	-.202	-.066	-.086	-1.396
S PW 2	6.84	2.06	.63	20.57	.70	6.10	.44	6.40	-.817	-.683	.083	.088
S PW 3	5.64	2.16	-.57	-31.39	-.06	5.71	-.33	6.06	-.315	-.198	.184	-1.078
S PW 5	4.76	1.74	-1.45	-58.00	-.55	5.52	-.82	5.88	.583	.443	.033	-.206
S PW 15	5.40	1.93	-.66	-26.87	-.30	5.93	-.32	5.92	.143	.245	.634	-.996
S PW 25	5.64	2.00	-.57	-22.91	.01	5.76	-.23	6.12	-.002	-.697	.099	-.348
S WV 3	5.24	2.15	-.97	-44.26	-.34	5.56	-.64	5.95	-.032	.430	.803	-.653
S WV 3	6.57	2.93	.51	21.91	.21	6.14	.20	6.14	-.191	.043	-.129	-1.462
S WV 8	5.60	1.85	-.61	-22.07	-.19	5.69	-.44	6.03	.190	.784	.316	-1.086
S WV 8	5.91	2.38	-.16	-7.49	-.07	6.03	-.10	6.04	-.152	.086	-.104	-.924
S WV 10	4.79	2.16	-1.03	-44.05	-.50	5.47	-.61	5.65	.283	.226	.286	-.332
S WV 10	5.96	2.11	-.25	-3.80	.07	5.78	-.22	6.15	.305	.349	-.204	-1.313
S WV 12	5.55	1.84	-.27	-8.77	-.10	5.66	-.19	5.76	.061	.080	.317	-.665
S WV 12	6.80	1.83	.59	32.75	.57	6.02	.28	6.34	.245	.865	.159	-1.245
S WV 13	7.36	2.00	1.15	46.10	.94	6.26	.67	6.54	-.691	-.318	-.554	-.361

S WV 13	7.71	2.06	1.64	69.25	.74	6.35	.71	6.43	-.879	-1.093	-3.020	.272
XS BC 9	6.86	2.47	.75	27.63	.48	6.12	.37	6.30	-.448	-.450	-.757	-.834
XS BC 21	7.63	1.95	1.57	72.28	.72	6.35	.71	6.41	-.668	-.241	-.394	-.445

STIMULUS CODE: D=Daniel photo, S=Swetnam photo; A=Angostora, BR=Barley Ridge, F=Flechado, FNL=Fenton Lake, FAL=Fawn Lakes, GEL=Golden Eagle Lodge, JT=Jemez Trail, LG(1,2)=Los Griegos(1,2), P=Peralta, PH=Peralta High, PHW=Peralta High West, SRR(1,2)=Singing River Ranch (1,2), WMC=West of Moly Corp, B=Bonito, WV=West Vallecitos; Slide Numbers=Point #(1-5), Slide #(1-4)